

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 708.—VOL. XIX.]

LONDON, SATURDAY, MARCH 17, 1849.

[PRICE 6D.]

### Stannaries of Cornwall—In the Vice-Warden's Court.

BICKFORD AND OTHERS v. RICHARDS.

**WHEREAS** the VICE-WARDEN did, by an ORDER, or DECREE, made in the above-mentioned cause, and bearing date the 7th day of November last, Order and Decree that a SALE be made of the ORES, HALVANS, and (if necessary) the ENGINES, MACHINERY, and MATERIALS, upon and belonging to TRENOW CONSOLS MINE, in the parish of FERRANTHNOE, within the said Stannaries, under the direction of the Registrar of this Court, and that the proceeds of such sale should be applied by the said Registrar in the manner directed by the same Order or Decree.

Notices hereby given, that, pursuant to the said Order, or Decree, a PUBLIC AUCTION will be HELD at TRENOW CONSOLS MINE aforesaid, on Monday, the 26th day of March inst., at Eleven o'clock in the forenoon, for SELLING the undermentioned

#### MINING MACHINERY—viz.:

All that ONE 35-inch cylinder STEAM-ENGINE, of equal beam, 10-feet stroke, with its appurtenances complete, without boiler.  
For viewing the same, application may be made to Mr. Glasson, on the mine; Captain Evans, St. Agnes; and for further particulars (if by letter, pre-paid) to Mr. Roberts, solicitor, Truro.  
Dated Registrar's Office, March 13, 1849.

#### MINING MATERIALS FOR SALE.

**MESSERS. TREVENA & PRYOR** will offer FOR SALE, BY PUBLIC AUCTION, on Tuesday, the 20th day of March inst., at Ten o'clock in the forenoon, at WHEAL ANDREW and NANGLE'S MINES, in the parishes of GWENNAP and KEA, the following valuable

#### MINING MATERIALS.

Consisting of 1 70-inch cylinder STEAM-ENGINE, with two boilers, &c., complete; balance-bob, cat-head, 1 spare boiler, capstan-ropes, 4 horse-whims, 1 4-head stamping mill wheel, 24 feet in diameter, 1 6-head ditto, 18 feet diameter, 1 9-foot 20-inch pump, 9 9-foot 15-inch ditto, 1 3-foot 15-inch ditto, 1 4-foot 15-inch ditto, 4 9-foot 15-inch ditto, 1 7-foot 15-inch ditto, 1 6-foot 15-inch ditto, 12 9-foot 14-inch ditto, 1 3-foot 14-inch ditto, 4 9-foot 13-inch ditto, 7 9-foot 12-inch ditto, 1 10-foot 12-inch windrose, 1 5-ft. 17-inch ditto, 1 10-foot 15-inch ditto, 1 9-foot 16-inch working barrel, 1 15-inch door-piece and door, 1 17-inch ditto, 1 14-inch ditto, 1 14-inch H-piece, 1 16-inch ditto, 1 20-inch stuffing-box and gland, 1 15-inch ditto, 1 14-inch ditto, 1 9-inch ditto, 1 10-foot 19-inch plunger-pole, 1 10-foot 15-inch ditto, staples and glands, pump rings, bucket prongs, whim chain, whim sheaves, whim kibbles, a 43-inch smith's bellows, 1 36-inch ditto, smith's crane, large quantity of cast-iron, ladders, and other articles, to numerous mention, and also the ACCOUNT-HOUSE FURNITURE.  
The above materials are in excellent condition, and will be positively sold without reserve.—Dated March 5, 1849.

#### WHEAL ST. ANN MINE, DREWSTEIGTON, DEVON.

**VALUABLE MINE MATERIALS, ROTARY STEAM-ENGINE, &c., FOR SALE.**  
**M. F. A. DAVIS** has been favoured with instructions to submit FOR SALE, BY AUCTION, on Wednesday, the 21st of March, 1849, at Eleven o'clock in the forenoon, the undermentioned

#### STEAM-ENGINE AND MATERIALS

of the said mine—comprising 21 9-foot 8-inch pumps, 2 10-foot 7½-inch working barrels, 1 10-foot 8½-inch ditto, 2 9-foot 8-inch windroves, 1 matching piece, 2 6-foot doorpieces and doors, 1 6-foot 9-inch ditto, 1 8-inch plunger-pole and case, with windroves, H-piece, top doorpieces, stuffing-box and gland, 20 fathoms of 1½ bucket-rods and joints, balance-bob, with ring-post, cast-iron boiler's head plates, &c., sweep-rod, with plates, bearings, and brasses, an excellent capstan and shears, with pulleys and brasses, complete, 30 fathoms 8-inch connection-ropes, with wrought-iron plates, &c., 80 fathoms 10-inch capstan rope, nearly new, horse-whim, 60 fathoms whim-ropes, with chain, 4 whim pulleys, set of screw taps and plates, several kibbles and water barrels, kibble mould, bolts and burs, yokes, staples, and glands, 2 crushing rolls, crown wheel, 4 feet 10 inches diameter, 36-inch smith's bellows, 2 9-foot flat-thread lifting screws, with the usual implements of the smith's shop, a quantity of smith's tools, new and old iron, chests, shovels, barrows, carpenter's bench and chest, a quantity of oak and other timber, leather, brass-ropes, ladders, and ladders, piece 14-inch square timber, 16-foot long, an excellent one-horse cart, chaff-cutter, COUNTING-HOUSE FURNITURE, miners' dial, by Haye, with a great variety of other useful articles.

Also, a superior 18-inch cylinder ROTARY STEAM-ENGINE and BOILER, 25 feet long, with tube, above 6 tons (new), with an old boiler, 12 feet long.

The above materials are exceedingly good—a large portion of them being nearly new. The mine is situated near Whiddon Down, in the parish of Drewsteigton, within one mile of the turnpike-road, between Okehampton and Crockerham.

The whole may be viewed by application to Mr. Penrose, on the mine, and any further particulars obtained of him, or of the auctioneer, at his office in Tavistock.

Refractions will be provided.

West-street, Tavistock, March 5, 1849.

### VAUXHALL FOUNDRY, LIVERPOOL—TO CLOSE A PARTNERSHIP.

**TO BE SOLD, BY AUCTION, without reserve, at the** Clarendon Rooms, South John-street, Liverpool, on Monday, the 2d of April next, at Twelve o'clock precisely, unless previously disposed of by private contract, all that valuable property known by the name of

#### THE VAUXHALL FOUNDRY,

Situate in Vauxhall-road, Liverpool.

The property consists of about 8500 square yards of land, of which about 5500 yards are freehold of inheritance, and the remainder leasehold, at a ground rent of £153 8s. 4d. per annum, under a lease for 75 years, of which 59 years are unexpired, with the several BUILDINGS and ERECTIONS thereon, suitable for carrying on the business of Engineers and Ironfounders, in all its branches, consisting of extensive Foundries, Smithies, Fitting and Erecting Shops, Planing Machines, Houses, Offices, &c.

The MACHINERY is all of modern construction, and by eminent makers, and consists of upwards of 60 turning lathes, 15 planing machines, boring, drilling, screwing, and slotting machines, besides every requisite for making the largest description of engines and other machines. The models are of the most extensive character, comprising those for marine engines, from 10 to 600-horse power, stationary and locomotive engines, water-wheels, sugar, rice, coffee, and saw-mills, of every description, and upwards of 1000 wheel patterns, suitable for millwork.

If not disposed of as a whole, the property will be sold in lots, commencing with the Land and Buildings.

Further particulars, with plans of the property, may be obtained, and catalogues of the machinery seen, on application to the owners, on the premises; or to Messrs. Laces, Myers, Rigge, and Roscoe, solicitors, Castle-street, Liverpool.

#### IMPORTANT AND EXTENSIVE SALE OF FIR WOOD.

**THERE WILL BE EXPOSED TO SALE, BY PUBLIC** ROUP, within the Hotel at Fochabers, on Friday, the 13th day of April next, at One o'clock P.M., the extensive and valuable

#### FIR WOODS OF THREPLAND AND SLEEPERSHILL.

Belonging to the trustees of the late Earl of Fife. These woods are situated between FOCHABERS and ELGIN, adjoining the turnpike-road, and about 3 miles from the shipping port of Garroch, on the Moray Frith. Threpland contains upwards of 140,000, and Sleepershill upwards of 430,000, cubic feet. The Woods will, in the first place, be exposed in two portions, as above; and if not sold, will be thereafter subdivided into lots to suit intending purchasers. The Woods may also, if desired, be allowed to remain for a certain period on the ground.

The articles and conditions of sale may be seen, and all particulars ascertained, on application to Inglis and Burns, W.S., Edinburgh; James Young, land surveyor, Perth; or Alex. Forreath, Esq., of Newton, Elgin; and Mr. Pennycook, forester at Coxton, Lhanbryd, by Elgin, will point out the boundaries.

Edinburgh, Feb. 24, 1849.

#### FOREST OF DEAN.

**TO BE SOLD, BY PRIVATE CONTRACT, about FOUR** HUNDRED and THIRTY-FIVE ACRES of COAL MINES—three parts of which may be worked by levels, which would lift the coals at 100 yards, and a tramroad run through the middle of this gale, from the River Wye to Lideny Bason, at the River Severn, and the Gloucester and South Wales Railway is to go along this track of tramroad, which is expected to be finished in 12 months; and this gale contains some of the best coal in the Forest, and THREE STONE QUARRIES.  
For further particulars apply to J. Rogers & Son, agents, Bromsgrove, Worcestershire. (This advertisement will not be repeated.)

#### CHESTERFIELD, DERBYSHIRE.—TO ENGINEERS.

**TO BE DISPOSED OF, BY PRIVATE CONTRACT, the** FORGE IRON-WORKS and PREMISES, at CHESTERFIELD, where the late Mr. Joseph Thompson for many years carried on an extensive engineering business, chiefly in the construction of steam-engines, and also the WATER-POWER, the STEAM-ENGINE, and valuable ENGINEERING MACHINERY connected with the works.  
The works are situated in the midst of a mining and manufacturing district; the business connection attached to them is large and highly respectable, and they are capable of proving a most eligible investment of capital to any purchaser who is a practical engineer. For particulars apply to Mr. Busby, solicitor, Chesterfield.

**VALUABLE SLATE QUARRY, in CARNARVONSHIRE.**  
—TO BE LET, for such term, and on such conditions, as may be agreed upon, the RIGHT of WORKING a valuable ROCK of SLATE, on the BLAENY-CWM-FRIDD, in the parish of PENMACHNE, upon which a large sum of money has been expended in driving a level, and in other works. The metal of this rock has been proved to be equal to that of the finest Penistone Quarries, which lie in the vicinity. The undertaking would suit a joint-stock company or a private speculator, as it can now be brought into early and extensive work, at a comparatively small outlay.  
For particulars apply to Francis Hallows, Esq., National Provincial Bank, Doigelly; and to view the quarries, to Mr. Humphrey Williams, Blaeney-cwm Farm, Penmachne.

#### CORNWALL—TYWARNHAILE MINES.

### IMPORTANT AND VALUABLE COPPER MINES TO BE LET, BY PRIVATE CONTRACT, comprising the extensive SETTIS formerly known as

UNITED HILLS, WHEAL CHARLES, and WHEAL FANCY, SOUTH TOWN,

belonging to the Duchy of Cornwall, in the parish of SAINT AGNES.—These mines having been surrendered to the Duchy by the late lessees, during the extreme pressure of the latter part of the year 1847, have since been placed in good working order, and are yielding large and increasing returns. They are now to be leased, at a moderate rate of dues, for a term of 21 years.

An arrangement can be made for putting the lessees of the Tywarnhaile Mines in possession of the adjoining estate of Wheal Sparrow, Wheal Charles, and Wheal Sparrow, Basett's United Hills, Wheal Charles, and Wheal Lydia, the property of the representatives of the late John Basett, Esq.

Proposals will be received at the Duchy of Cornwall Office, Somerset House; and any further information may be obtained by application there, or to H. Taylor, Esq., Falmouth, Duchy of Cornwall, Somerset House, Feb. 20, 1849.

**TO BE SOLD, a valuable FREEHOLD ESTATE, of about** 240 acres, containing rich VEINS of ANTHRACITE COAL and IRONSTONE, situate within half a mile of a harbour and railway.—TO BE LET, on very advantageous terms, SEVERAL HUNDRED ACRES of COAL and IRONSTONE, adjoining the above, and with Shafts and Levels already open. The property is well worth attention, as such advantages are seldom offered to the public as the present.  
Apply to Thomas Stokes, Tenby, Pembrokeshire.

#### MALEABLE IRON-WORKS & PROPERTY FOR SALE.

The MALEABLE IRON-WORKS and LANDS of BRAIDHURST and WILTON, belonging to the West of Scotland Malleable Iron Company, as formerly advertised.—Apply to Mr. James Anderson, 88, St. Vincent-street, Glasgow, March 1, 1849.

#### EXTENSIVE IRON-WORKS FOR SALE.

**TO BE SOLD, BY PUBLIC ROUP, within the Royal Ex-** change Sale Rooms, GLASGOW, upon Wednesday, the 11th day of April next, at One o'clock in the afternoon (if not previously disposed of by private bargain), the

#### BLAIR IRON-WORKS.

belonging to the Ayrshire Iron Company, situated in the parish of Dalry and county of Ayr.—These works, which have been recently erected at an immense cost, consist of

TWO BLOWING ENGINES, FIVE BLAST-FURNACES, WORKMEN'S HOUSES, STEAM-ENGINES for working the minerals, together with UTENSILS at the pits, furnaces, &c., all in working order, and capable of producing upwards of 35,000 tons of pig-iron per annum.

One of the blowing engines, high-pressure, estimated at 90-horse power, was erected in 1841—the other, a condensing engine, was erected in 1847, and is estimated at 200-horse power; the latter being capable of blowing five furnaces, and both fitted up in the most substantial manner, and at present in good working condition.

The furnaces have been erected with the greatest care, and are fitted up with air-heating apparatus of the most approved construction. The make of each furnace has generally averaged upwards of 150 tons of iron per week, and some of them have produced 180.—There are, besides the manager's house and store buildings, 187 workmen's houses, in a habitable state, attached to the furnaces and pits, and there are 20 partly built, which could be finished at a small additional outlay. There are also a new foundry, Wright's shop, fire-brick work, smithy, &c.

The MINERAL FIELDS consist of COAL, IRONSTONE, LIMESTONE, and FIRE-CLAY, held in lease by the company at moderate fixed rents and royalties, all situated within easy distances of the furnaces, and for the most part have the advantage of railway communication.

The COAL FIELDS consist of several hundred acres, of which only a small portion has been wrought; several pits, fitted with good engines and machinery, are sunk to the coal, and partly in operation.

The IRONSTONE consists of the well-known BLACK-BAND, yielding about 3000 tons of calcined stone per acre, and it has been estimated that there are 300 acres, or thereby, still to work, besides a large additional extent, which, from recent workings adjoining, it is believed also exists. There is also a large extent of CLAY-BAND IRONSTONE, hitherto little wrought, but capable of yielding a large output. There are 15 pits, with excellent steam-engines, some of them in present operation, and others ready to resume working.

The LIMESTONE QUARRY is worked by open cast, and is connected with the works by railway.

The FIRE-CLAY is abundant, of excellent quality, and cheaply produced.

There is a large stock of ironstone on the ground, which can be got at a valuation, so that the works can be put into immediate operation, and having a connection with the Glasgow and Ayr and Ardrossan Railways, along which the produce has the privilege of conveyance at low rates, the present affords an excellent opportunity for parties entering into the iron trade.

#### MALEABLE IRON-WORKS.

Considerable progress has been made in the erection of extensive malleable works, immediately adjoining the pig-iron works, which will be sold either together therewith or separately.

Memorandum of leases, plans of the property and mineral workings, may be seen, and every necessary information afforded, on application to Mr. Biggart, Dalry; Mr. Brown, 35, St. Vincent-place, Glasgow; Messrs. McClelland and Mackenzie, accountants, Glasgow; Messrs. Gibson, Craig, Dalsiel, and Brodie, W.S., Edinburgh; or Messrs. Montgomerie and Fleming, writers, Glasgow—the last being in possession of the title deeds and articles of roup.

N.B.—The purchaser of these works has an opportunity of at the same time acquiring the mansion-house and lands of Pitcon, immediately adjoining.

#### VALUABLE ESTATE AND MINERAL FIELD IN AYRSHIRE FOR SALE.

**TO BE SOLD, BY PUBLIC ROUP, within the Royal Ex-** change Sale Rooms, Queen-street, Glasgow, upon Wednesday, the 11th day of April next, at One o'clock afternoon, unless previously disposed of by private bargain, all and whole the

#### LANDS AND ESTATE OF PITCON.

Extending to about 216 acres, Imperial measure, as more particularly described in former advertisements; together with the MANSION-HOUSE, and OFFICES and GARDEN thereto belonging; and the whole MINERALS and METALS in the said Lands, excepting those 8 acres, or thereby, Scotch measure, now belonging to the Glasgow Iron Company, of their presently-working seam of ironstone in the said Lands; and also excepting the Pitcon Railway and Branches, in so far as the same are within, and pass through, the said Lands.

The MANSION-HOUSE is in good order and repair, and has attached to it a set of suitable accommodation offices, with walled garden, shrubbery, and pleasure ground; and the whole are well enclosed.

The LANDS, lot under lease, extend to about 140 acres Scotch or thereby, and are at present held by a respectable tenant, at a surface rent of 490l. sterling per annum. The farm steading is in good order and repair.

The MINERALS, comprising the most valuable description of ironstone, extend to about 140 acres still unwrought, and are held upon lease by the Ayrshire Iron Company. Upon a moderate calculation, the black-band yields about 3000 tons calcined ironstone to the Imperial acre. There are, besides, several seams of Coal and other Minerals in the Lands.

This estate is situated near to the village of DALRY, at which there is a station upon the line of the Glasgow, Paisley, and Ayr Railway, and in the immediate neighbourhood of the Ayrshire Iron Company's Works, with which it is connected by railway communication, and will, in consequence, form a most desirable and profitable investment to the purchaser of the Ayrshire Iron Company's works (the Blair Iron Works), which, along with the benefit of the mineral lease of Pitcon, are advertised to be sold, by public roup, at the same time and place with this estate.

The public and parish burdens payable from the estate are small.

For further particulars, application may be made to McClelland and McKenzie, accountants, 128 Ingram-street, Glasgow; Robert McCowan, accountant, 17 Gordon-street, there; Knox and Findlay, writers, 29, St. Vincent-place, there; James McCosh, writer, in Dalry; or to Douglas and Rankin, writers, 81, St. George's-place, Glasgow, in whose hands the articles of roup and title deeds, and a plan of the estate and mineral workings, may be seen.—Mr. McCosh will give directions for the lands being pointed out, and the mansion-house, offices, and garden, being shown to inquirers. BOGLE & CO., Auctioneers, Glasgow, March 12, 1849.

#### DUISBURG IRON-WORKS AND MINES, in WESTPHALIA, CLOSE TO THE RHINE.

**MANAGED IN ENGLAND ON THE COST-BOOK PRINCIPLE.**  
The demand of the North-Western States of the Zollverein for pig-iron smelted with coke requires an annual importation which, in 1848, exceeded 100,000 tons of that metal. Its present average current price, in Westphalia, inclusive of duty, is, per ton £5 16s. Being possessed of extensive mines of iron ore, entirely paid for, the Duisburg Company proposes to turn out this year only 150 tons of pig-iron, made with coke, per week, which, owing to circumstances peculiarly favourable as to minerals, fuel, and carriage, can be produced at a cost, per ton, not exceeding 20 0

Thus leaving for division among the holders of the 3000 shares, in which the capital stock is divided, a net profit, per ton, of £3 16s. 8d. Or £9 per share of £15.

Every further information to be obtained, and specimens inspected, at the company's offices in London, 28, Moorgate-street.

#### TO PUBLIC COMPANIES, MERCHANTS, MINERS, &c.

—EVERY DESCRIPTION of ACCOUNT BOOKS requisite for the Counting-House or Board-Room, manufactured to any pattern and ruling, hot-pressed, and bound in the most durable manner (paged in type, without additional cost), on a scale of charges reduced to meet the times.—WRITING PAPERS, ENVELOPES, and STATIONERY, of the very best description, on the like reduced scale. Lists on application.  
F. W. RALPH, COMMERCIAL STATIONER, 36, THROGMORTON-STREET, BANK, LONDON.

**WANTED.**—The ADVERTISER is at liberty to enter into an ENGAGEMENT as AGENT, or MANAGER, of LEAD or OTHER MINES: he is practically acquainted and conversant with mines and mining operations, also with every description of engine and machinery used in the working of mines and dressing of ores.—For further particulars (apply by letter) address "A. B." care of Mark Sherlock, Esq., smelter and lead merchant, Middleton-in-Teesdale, Barnard Castle, Durham.

**TO MINING PROPRIETORS, MANUFACTURING CHEMISTS, GAS AND WATER COMPANIES, &c.** A YOUNG MAN, aged 22, having a thorough knowledge of Practical Mechanics, Chemistry, the general application of Mechanical Principles, and also a tolerable Draughtsman, wishes to obtain a SITUATION, in which he may apply his knowledge usefully, to the promotion of his employer's interest as well as his own. Salary not so much an object as a permanent situation, with a prospect of improvement and advancement. Unexceptionable references can be given, and security procured for any reasonable amount.—Address (post-paid) "J. N.," No. 23, Camden-street, Islington.

**FOR SALE, a SECOND-HAND 60-horse HIGH-PRESSURE** PUMPING-ENGINE, 30-inch cylinder, 7-feet stroke, with two large boilers, in excellent condition. Also, a 10-horse ATMOSPHERIC DRAWING-ENGINE, with boiler, cog-wheels, and drum—the cylinder constructed so as to be easily altered into a 20-horse condensing. Also, a LOT of 15-inch PUMPS.  
Apply to Mr. William Clark, Holmes Colliery, Rotherham, Yorkshire.

**TO BE SOLD, BY PRIVATE CONTRACT, the under-** mentioned MINING MACHINERY and MATERIALS, at TING-TANG CONSOLS MINE, in the parish of GWENNAP—viz.: 1 60 and 100-inch combined cylinder STEAM-ENGINE, 9-feet stroke in the cylinder, and 8½-feet in the shaft, with first piece of capstan and shears, 17 13-inch pumps, 14 15 and 16-inch H-pieces, doorpieces, windroves, washing barrels, &c.—Particulars may be obtained on application to Captain W. Richards, Redruth; or Mr. W. Clyma, auctioneer, Truro.  
Dated March 6, 1849.

**TO BE SOLD, a PUMPING-ENGINE, 30-inch cylinder, 9 ft.** stroke, built by Mr. West, engineer, nearly new—only been worked about three years, no engine ever done better duty when at work: together with a SEVEN-TON BOILER, SPRING BEAM, and first set of rod-shaft attached, for £400. The engine is within a few miles of a good shipping port, being near Liskeard—one good road.—For particulars apply to Capt. Osburn, Liskeard; or Mr. Wm. Rendle, Octagon, Plymouth.

**STEAM-ENGINES FOR SALE—A BARGAIN.—A PAIR** of MODERN ENGINES, of 160-horse power each, with BOILERS—all equal to new: fitted to Smith's Patent Propeller, and complete, with driving wheel, funnel, steam-pipe, gearing, &c., admirably adapted for a ship of large tonnage, or for mining purposes. Also, TWO PAIRS of MARINE BEAM ENGINES, by Favett and Co., of Liverpool—each engine of 65-horse power, in capital condition.—For particulars apply to Messrs. Bayley and Ridley, 3, George-yard, Lombard-street.

**STEAM-ENGINES.**—From 8 to 20-horse power ENGINES ALWAYS IN STOCK.  
Apply to Mr. CAPPER, Engine-Maker and Founder, BIRMINGHAM.  
Price—£12 to £16; with boiler, £22 per horse.

**MINING PROPERTY.—Mr. JAMES HERRON, MINE** AGENT, at CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE OF SHARES in FIVE CLASS MINES, paying regular dividends, and yielding to the purchaser from 17½ to 25 per cent. upon his outlay. He is also in a position to transact business in the following—viz.: St. John del Rey, Tamar, Trevilkey and Barrier, Great Devon Consols, Alten, Australian, Condurrow, East Wheel Rose, and Wheal Seal Mines, Great Consols Gwennap, Trevilkey, Trethellan, Mary Anne, East Tamar, Tincroft, and Kerwick Mining Company.

**MINING OFFICES, THREE KING'S COURT, LOMBARD** STREET, LONDON.—Messrs. H. TREDNICK & CO. beg to draw the attention of capitalists to the DEPRESSED MARKET VALUE OF SHARES in ENGLISH and FOREIGN MINES, many of which pay dividends of from 20 to 30 per cent. per annum, whilst those on the eve of so doing are selling at corresponding low prices.—Messrs. T. & Co. continue to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

**MINING OFFICES, No. 8, GEORGE-YARD, LOMBARD-** STREET, LONDON.—Mr. RICHARD THOMAS (who has had 20 years' experience as a mining agent in London) OFFERS his SERVICES in the PURCHASE and SALE of MINE and OTHER SHARES, on commission. Purchases in many valuable mines may now be made at unprecedentedly low prices. The fullest information given (without charge) relative to mining investments and operations.  
N.B.—R. T. has now ON SALE a limited number of SHARES in an undertaking of offering unusual advantages, situated in one of the best mining districts in Cornwall. Full particulars will be furnished on application.

**MINING OFFICES, No. 1, ST. MICHAEL'S-ALLEY,** CORNHILL, LONDON.—Messrs. WATSON and CUELL have FOR SALE, SHARES in Helgston Down, East Tamar, South Tamar, Devon Great Consols, St. John del Rey, Trevilkey, Mary Anne, and most of the best dividend-paying mines in Cornwall; and are PURCHASERS of Condurrow, North Pool, Stray Park, Trevilkey and Barrier, Tincroft, West Wheel Jewel, &c. &c.—Messrs. W. and C. have also FOR SALE, a few SHARES in the GRAND JUNCTION WATER-WORKS.

**MR. THOS. P. THOMAS, MINING AGENT, and DEALER** in RAILWAY, GAS, BANK, INSURANCE, and OTHER SHARES.  
3, GEORGE-YARD, LOMBARD-STREET, LONDON.

T. P. THOMAS is a SELLER of SHARES in the leading MINES of Cornwall, Devon, and Wales—paying from 10 to 30 per cent.—Statistical information afforded upon personal application, or by letter.

**MR. RYE, 77, OLD BROAD-STREET, is a BUYER in** South Frances, Condurrow, Stray Park, West Tolgu, Wellington Mines, Carn Brea, Comfort, Levant, East Pool, East Croft, Trevilkey Consols, Mary Anne; and SELLER in South Bassett, West Consol, West Caradon, Devon Great Consols.

**MR. GEORGE BATE, JUN., CIVIL ENGINEER AND** SURVEYOR, WOLVERHAMPTON.  
Offices in Queen-street, corner of Piper's-row.  
N.B.—UNDERGROUND MINING SURVEYS accurately executed.

**GUADALCANAL SILVER MINING ASSOCIATION.**—SPECIMENS of the ORE from the above-named MINES having been RECEIVED, the shareholders may INSPECT the same at the OFFICES of the association, 34, Broad-street-buildings, City.—March 16, 1849.

**PENNANT AND CRAIGWEN CONSOLIDATED LEAD** MINING COMPANY.—Notice is hereby given, that a SPECIAL GENERAL MEETING of the shareholders of this company will be HELD at the offices, 57, Thread-needle-street, on Tuesday, the 3d of April, at Twelve o'clock precisely, to receive a Report from the directors on the proceedings of the company, to make a call, to forfeit shares, and for other important business.  
WILLIAM W. MANSELL, Purser.

**TINCROFT MINING COMPANY.**—Notice is hereby given, that the ANNUAL GENERAL MEETING of the shareholders in this company will be HELD on Tuesday, the 19th day of April next, at 44, Finsbury-square, at Two o'clock precisely.—London, March 15, 1849.

**HOLNE PARK TIN AND COPPER MINE.** (WORKED ON THE COST-BOOK SYSTEM.)  
Capital £7680, in 1536 shares, of £5 each.—Deposit £2 per share.  
OFFICES—18, ADAM-STREET, ADELPHI.

This valuable MINERAL PROPERTY is situate in the parish of HOLNE, in the county of DEVON, on the banks of the River Dart, and held under an agreement for lease of 91 years, at 1-12th dues.

This mine is a new discovery, and now at work to the south of the Whiddon, Ashburton United, and West Beam Tin and Copper Mines, about 3 miles; and to the north-east of the Coombe Tin Mine, 1 mile. It is about 3 miles west of the town of Ashburton, and 3 miles from Totnes, through which place the South Devon Railway passes to Plymouth, by means of which the ore can be conveyed to port for exportation, at a very moderate expense. The River Dart being navigable as far up as Totnes, also affords an easy and cheap mode for exportation.

The sett is in a beautiful hillside, or clay-alto strata; there are four lodes now worked on, and there are several large lodes of tin and copper traversing the sett—all composed of pectolite, soft spar, prism, mende, carbonate of lime, and large rocks of copper ore, of rich quality (from 14 to 26 per cent.).

To the west of this sett the lodes form a junction with the Dartmoor granite range, where the great deposits, both of tin and copper, &c., have been discovered, making the largest and most productive mines in Cornwall and Devon.

The River Dart, running at the foot of the hill, can be made available (with a small outlay) for all the purposes of the mine, thereby superseding the necessity for steam-power, and causing a great saving in the working of the mine.

The reports of the various mining capitalists who have lately inspected the sett, speak in the most flattering and encouraging terms.  
These reports are set out at length in the prospectus, which can be obtained at the offices, where also every other information will be given, together with the form of application for shares, by applying personally, or by letter, addressed to the secretary, 18, Adam-street, Adelphi, London.—Copies of the prospectus can also be had at the office of the Mining Journal, 26, Fleet-street.



## Original Correspondence.

## VAN DIEMEN'S LAND COMPANY—ESTABLISHED 1825.

Sir,—I am sure your columns are always open for the benefit of many over a few; may I, therefore, beg your kind offices in aid of an inquiry as to the company above alluded to, established in 1825? I am an original subscriber; and if, from its antiquity, it had obtained the reputation and celebrity of a "Day and Martin," or a "Rowland's Macassar," I should then have thought myself born under a lucky planet. But it is neither the one or the other; and I am afraid, with a continuance of the same management, that another 25 years may roll over, and we may then find the company handed down to the descendants of the present family direction, with no better results. Allow me to inform you, that the said board of direction consists of 16 members, comprising—two Alexanders, three Cattleys, three Peares, two Helmeses—10, with six other gentlemen—three of whom are, it is said, connections of either one or the other of the aforesaid family party.

Now, whatever may be the distinguishing qualifications of these gentlemen for such a company—to say the least of it—the voices and opinions of ten of the directors are reduced upon the principle, that union is strength, to that of four; and we may fairly suppose that, from the great cordiality which has existed among these ten gentlemen for a demi-jubilee, that they are the four governors; and, if so, why not reduce the direction by one Alexander, two Cattleys, two Peares, and one Helmes? I do not think this subject has ever been brought before the proprietors, or I believe they would have considered it their interest to infuse some new materials into their camp, by which the company would be much benefited, and fresh confidence instilled. At any event, the state of things could not be worse by a change, and one might be spared the annual visitation of a 20s. call, in exchange for a few fair promises and hopes of an early return. My great hope is, that a little delicacy be stirred up, and that some of the proprietors may be induced to call a meeting prior to that of the company's, in order that some explanations may be required; and, if need be, a committee appointed to look into the accounts and management. For such a course, we have had so many precedents lately, that I am inclined to think it need only be suggested in order to obtain; for when a king has been dethroned, it is not impossible but that commoners may follow. Certainly no harm can result, although it may be at the expense of a little modesty.—Who's Who? March 14.

## RAILWAY SIGNALS.

Sir,—In 1846 I wrote a letter on this subject, which appeared in many provincial, and in some of the London, newspapers, in which I suggested a simple means for effecting a communication between passengers travelling by railway and the guard, or signal man, of a train. As nothing practical has arisen out of my suggestions, or, as I believe, out of those of any other person, I am induced to forward you the present, which appeared in the *Mechanics' Magazine* on the 10th February, to call attention again to the subject. None will deny, that abstractedly it is desirable to have such a means of communication as above. In order to effect this, I propose to have a signal of the ordinary kind in use on railways—viz., a circular flat piece of zinc, or other metal, of suitable size (say 12 inches in diameter), and painted, to render it the more easily visible, on the roof of every carriage, and fixed on a vertical rod, or spindle, moveable from the inside to the extent, perhaps, of half a circle, and capable of turning the signal at right angles to the line of vision, and thus face the guard. When not in requisition it would stand edgewise, and present only a line to the sight; this I propose for the day signal.

For a signal by night, a lamp, or lantern, fixed on the same rod or spindle, immediately under and adjoining the day signal, may be easily contrived. Thus, let the lamp have three sides dark, and in the fourth a ball's-eye red light, with a reflector. When required to give an alarm, the spindle is moved from within, and the red light is shown through a hole in one side of the box or case, placed to protect the lamp from the weather; the hole in the case to be glazed with plain glass. The guard would instantly perceive from which carriage an alarm was raised, and descend from his watch box (which is elevated a little above the roof of the carriage, and constructed either on the "tender" or the first carriage, as the case may be), to ascertain the cause of alarm, and, if he deemed it expedient, stop the train. Steps should be constructed the full length of each carriage, under a rail pat (say) breast high, along the length of every carriage, and, therefore, both the steps and the rail extending to the entire length of every train. By this arrangement the guard could go to any part of a train in perfect safety. It will be seen that an objection, often urged by those who disapprove of my plan, because it would put it in the power of idle persons to stop the train whenever they might think proper, or for a frank, or any idle excuse, is met; because the guard would use his discretion and stop the train, or not, according to the necessity of the case. Connecting-rods may be contrived to act on the vertical spindle or rod, from every compartment of a carriage.

I would observe that the same lamp which is used to light the interior of the carriage might be made available for the purpose of the night signal before alluded to. It should be made punishable by fine, or otherwise, to raise an alarm without reason. It would not be attended with any great outlay to carry out the plans here proposed, and I believe they would be found practicable, and answer the end desired. The travelling public have a right to expect that there should be some such provision as above, and I should be pleased to see that directors of railway companies carried out the suggestions I have made, or adopt other means that should be proposed to answer the same end.

Red Lion-square, March 12.

## DESTRUCTION OF WOOD.

Sir,—I have long thought that a considerable saving would be effected in the expenditure on mines, and other works, where wood is extensively used, if it were protected against atmospheric influences. In all the mines that I have visited, the wood, generally, lies exposed to the alternations of rain and sun. If a coat or two of paint, or of coal or gas tar, were applied to the wood, it would last probably three times as long as it now does; but if it lasted twice as long, or only a little longer, than the naked wood, the trifling cost of the application would be amply compensated for.

It is almost surprising that this matter has been so long overlooked or unattended to by the numerous and intelligent managers of our mines. Perhaps the very precarious nature of mining may account for the omission—the agents conceiving that the plain wood will last as long as the occasion for it. But that supposition should not be allowed to interfere with due attention to economy, which, I take it, is involved herein; for, when the mine ceases to work, the wood at a sale would bring a larger sum, if so preserved. Water-wheels are very rarely painted, or otherwise protected, so that they last a very short time, comparatively. Keep a water-wheel well painted, and it will last a very long time without requiring repair; and all wood in the open air should be preserved by some well-known preservative.—R. Symons: *Truth*, March 14.

## TIMBER TRACKS—GRANITE TRACKS.

Sir,—Since my last communication appeared in your last Number, on the subject of blocks of granite, in lieu of Mr. Motley's proposed timber tracks, in a ramble which I took, a few days since, over Dartmoor, I observed a road of this description, consisting of granite blocks 2 ft. wide, and 14 in. deep; one-half of the width on the outside is dressed down about 3 inches, forming flanges for the wheels, by which the carts are prevented getting off the road. This track is 7 miles long, and was laid down by the late Mr. Templar, of the Haytor Granite Company, and, I was informed, had been in use for the last 30 years, subjected to great loads with heavy gradients; yet, considering the time, the wear and tear appear but trifling; and I certainly consider, with such tracks, or if composed of other hard stone, there will be little difficulty in constructing, successfully, a locomotive to run on them. Near Brent, in the same county, is a wooden track railway, used for the conveyance of peat; it has only been in use a very short period, is continually requiring repairs, and is, throughout a most miserable affair. I am sorry to differ with your intelligent correspondent, but it would be cause for much regret to see a system of tracks adopted, and then turn out a failure. It would throw back the introduction of the system for years, even to an indefinite period.

## STEAM-CARRIAGES ON COMMON ROADS.

RESPECTED FRIEND.—Your correspondent, "John Gollop," says that a locomotive engine, possessing all the improvements described by Thomas Clarke (of course including condenser, &c.), was made at the Wellington Foundry, City-road; and, according to his account, was perfect, both in

principle and appearance—at least superior to all previous attempts; but he does not know where it now is, though he has no doubt of its existence. Now, as neither "J. G." nor "Road Locomotive Engineer" are likely to give the information desired, there is one thing either of the parties can do—viz., inform us who was the inventor; and, as we possess descriptions of all, or nearly all, former attempts, we shall probably be enabled to discover whether their statements are correct.

With respect to your correspondent, "Lithos," I may inform him that I have considered the subject of stone tracks, and am still of opinion that, by adopting the plan of timber paving (which is patented), timber will be very superior to either stone or iron, taking all circumstances into consideration, which I hope shortly to be enabled satisfactorily to prove.

"Road Locomotive Engineer" may rely upon it, that I will give my attention to his promised dissertation on the failures of past attempts at locomotion on common roads, and particularly to his details of essentials for procuring its success. Your correspondent, "E. E. Allen," has afforded a good opportunity for "Road Locomotive Engineer" being the means of getting the perfect steam common road carriage, to which he has referred, brought before the public, by relieving him from the necessity of devoting any of his valuable time, beyond that of writing to "E. E. A.," as requested.

Bristol, 3 mo. 15.

THOMAS MOTLEY.

## STEAM LOCOMOTION ON COMMON ROADS.

RESPECTED FRIEND.—I have watched with considerable interest the discussion which has taken place, through the medium of thy columns, on "Steam Locomotion on Common Roads," and find with pleasure that the attention of scientific men is given to this important subject—men who have had the advantage of long experience in mechanical science, and than whom none are, perhaps, more fitted to carry out the plans proposed; but, although I have strong hopes as to the possibility of success, being attained, it cannot be concealed that there are obstacles to surmount. When we consider the fact which has been expended in experiments, this does not prove that these obstacles are insurmountable; but it is essential that we should be fully aware of their existence, and also of their nature, in order, if possible, to avoid the errors of those engineers who have entered into the subject with sanguine hopes of success. I may here remark, that I have occasionally met with individuals who had the misfortune of belonging to this class, and that when they have been disappointed, they have been so much so, that they have been led to conclude that a slight modification in an engine, or their fortune is made, and who live to be woefully disappointed. I do not mean to say that all those who give attention to this subject were similarly deficient—there are well-known names associated with the inventions; but, thus far, all those whom I have met, who had been in any way connected with it, invariably alluded to the subject with angry feelings, particularly when they heard any improvement proposed which was supposed might lead to success. These men are invariably sceptical on the subject—I presume, by satisfying themselves with the principle, that failure was not the result of insufficient skill and originality on their part, but because the statement of this object is an impossibility. This is a comforting, but it does not follow that it must be true. Every friend of progress will, at least, hope that it is not.

Almost every engineer who has paid any attention to the subject appears to have been impressed with the belief that the principle adopted in the first rude attempts to place the locomotive on common roads was sound, and that the only improvement required was in the details. Here I believe was the cause of failure. The history of inventions will prove that when a principle sought to be adopted, as being sound, there is no great difficulty in the details; or, at least, whatever difficulties may exist, they are usually surmounted by the skill of ingenious men; but, in respect to the common road locomotive, no improvement in the details has been productive of any great result. This is attributable, in my opinion, to the engineers exerting their ingenuity in building on a bad foundation, in solely giving their attention to the details, even at a period when the details were nearly as perfect as they required to be, and when the principle alone could be proved to be defective; in fact, many of the improvements introduced, although essential while building on the old principle, tended to render the machine more complicated, and thus more liable to derangement. T. Motley appears to have been impressed with the truth of these considerations; he proposes the adoption of timber tracks, an improvement which, I have no doubt, would prove of great value; but if a locomotive can be constructed in such a manner as to work well on a common road, it would be a more economical plan, at least in respect to many localities; of course, such a locomotive would still better on a timber track; indeed, such a road, with a perfect locomotive, might be rendered nearly as perfect as a railway, and the improvements introduced in many respects, as steam might then penetrate through inaccessible towns and villages in Europe, and other countries, which will not reap its benefits for ages to come, if railways are necessary for its presence; and surely the importance of attaining such an end is sufficiently great to warrant a calculation as regards the possibility of success.

One of the principal causes of failure, appears to me to have been, by the engineers virtually departing from the laws of Nature. In their attempt to place the locomotive on a common road, they have sought to draw a stone ton weight up a steep road with wheels; but if we place the stone on its back, as I have shown; or, a locomotive may be sufficiently powerful to draw 300 tons of stone on a railway, but if it is placed on the boiler, no amount of steam will coax it to move an inch; and thus, here the animal and the engine are alike. If we place a locomotive on a railway, and attach a train to it, placed on a macadamised road, it will be propelled at a slow speed; but reverse the arrangement, and place the train on the rails, and the engine on the road, and it will hardly move, proving that the engine will surmount the friction, provided there is a great weight on it; but will bear weight, if it is not intended with friction. The engineers do not seem to have examined this subject, as they must have considered that the engines of the road locomotive must surmount both weight and friction at once, or, in other words, they have made the moving power carry the load instead of propelling it; while it must be evident that if this latter plan could succeed, it must be on iron rails, as a great weight is required to produce sufficient "grip" on the level surface, but on the common road the friction being so much greater, there is always sufficient "grip," however great the weight may be; and if the weight on the engine is increased, the friction increases so enormously in proportion, that to attain a high speed with such a locomotive is impossible. Besides, the additional weight is injurious in another form; when the road locomotive encounters an obstacle, it may be raised several inches, and, of course, will fall with a force proportionate to its weight, thereby injuring the delicate machinery, and destroying the impetus previously attained. This has led many engineers to infer that the only chance of success is in diminishing the structure, which, indeed, is true, if the principle is laid to rest; but I have not slight hopes of the practicability of so doing, to any extent; besides, unless a road locomotive can be made to work on a level, it is above its own weight, it would be of very little value in an economical point of view.

The first locomotive I ever saw was Ogilvie's; this was at Southampton, in 1830, and as only a few years had then passed, since the idea of placing such vehicles on the road had occurred, the structure was, as may be expected, a clumsy, or, rather, a formidable-looking affair. It had somewhat the appearance of an old stage coach without wheels, placed on a huge wagon with a boiler under it; and I remember the villagers, a few miles from the town, were terrified at the sight of this black, grunting, lumbering monster, and, unwieldy as it appeared, I frequently saw several very steep hills on the Romsey road, and the rapidity with which it would wheel round, at sharp angles, was really wonderful; but the vibration produced by its propulsion was tremendous—it seemed as though it was ploughing the road on which it was running, and it was impossible not to feel apprehension for the safety of those on the top of this seemingly terrible vehicle. Three years after, I had frequent opportunities of seeing Hancock's steam omnibuses, in London; and I have no doubt, but that they were very plain, and, I believe, that in attempting to make it light, it had been made too small, the boiler being a very small space, but the vibration was scarcely perceptible, and the conductor appeared to have perfect control over it; and I must confess that it was not without surprise, after having left England, that I heard of this mode of propulsion being abandoned; but since that time I have paid more attention to the subject, and now the wonder, to me, is not why it was abandoned, but how it succeeded so well, so defective the principle appears to have been.

The question which remains to be considered is, whether it is possible to render the engine independent of the boiler and carriage, in order to adopt a principle more according to Nature's laws? I am aware that there are difficulties in the way, but as I believe that it is almost the only mode by which success is attainable, I may be excused for entering length into the subject. To place the engine, boiler, and carriage on different vehicles would not answer, they would be unmanageable as a whole, and with such a train it would be impossible to wheel round at sharp angles; the different parts must, therefore, form one vehicle, as though they were connected; but I believe it is possible to gain all the advantages which would result by constructing the different parts separately, without the inconveniences, by placing the engine, boiler, and carriage together, in a different form to that hitherto adopted. I would propose to construct a wrought-iron frame, sufficiently large to bear the carriage and boiler, the latter being placed behind the axle of the bearing wheels would pass through the lower part of this frame, under the carriage, or room for passengers; the bearing wheels, which would be only 9 ft. in diameter, would support the whole weight of the carriage, boiler, &c. I would then place a smaller iron frame within the first, which would be supported by the driving wheels, which would be of a much larger diameter, in order to allow of their axle passing through the frame, or bearing wheels, through bearings in the smaller frame, and through recesses in the outer frame, the driving wheels being outside; there should be also two bearing wheels to support the inner frame, or eight wheels in all. Within the inner frame I would suspend the engine on springs, in the usual way. The two frames would not be fastened together, but simply connected by means of short chains, and spiral springs placed horizontally between them at each end; this would allow of either frame being lifted several inches above the ground, independent of the other, which would be a great advantage in driving over imperfect roads. The advantages of this mode of construction will, I presume, be understood; the engine would have nothing to bear but their own weight and the driving wheels, the carriage, boiler, &c., being entirely supported independent of the engine, while the impetus imparted to the carriage would react on the engine, although no obstacle encountered by the carriage could have any effect on the engine; and should the driving wheels meet any obstacle which would cause them to be raised a few inches, the carriage, boiler, &c., would be raised with them, the weight of the engine being supported by the remainder of the vehicle. The greatest difficulty in the details of this arrangement would be in fixing the steam pipe in such a manner as to allow of the engine being raised a few inches without interfering with the boiler; it would be necessary to construct the pipe in sections, each part passing through a stuffing-box, or they might be furnished with movable joints; this would render the engine to move independently of the carriage and boiler, so that neither could be injured by vibration. Although these details may be difficult in arranging to perfection, I do not apprehend that there would be any insurmountable difficulty, for the principle is simple, and, as I said, various modes of adapting it will readily present themselves to the minds of those who may examine the subject. The most important part in the details is to avoid anything approaching to complexity; and that this can be avoided in the construction of the common road locomotive, I have but little doubt.

A few years since an invention was patented, by some ingenious individual, for constructing a portable railway. It consisted of a number of rails, carried and put in motion by the carriage, in such a manner as to leave one rail constantly under each wheel, each rail being afterwards carried over the wheel, in order to be again thrown on the ground, to allow the wheel rolling over it. I am not aware that this plan has been ever adopted, and I question whether it would answer with vehicles drawn by horses, but possibly the plan might be advantageously adopted with steam locomotives. The principle appears to me to be sound, but the details might be easily improved. Instead of having iron rails, I would propose to use an endless band of gutta serena, each length or section required to be immovable during the passing of the carriage, being rendered sufficiently rigid by means of steel rods fastened on each side, and to render it durable, I would cover it on both sides with small pieces of steel, not touching each other. I think a plan somewhat similar might be adopted with advantage, particularly in the colonies, and every one will agree, that if steam locomotion can be adopted on common roads, by whatever plan it may be, the advantage to the world would be incalculable. It is to be hoped, therefore, that no obstacles will discourage the present promoters from pursuing the subject to the utmost. A glorious field is before them, and every friend of civilisation will bid them God speed.—JOHN DE LA HAYE: *Liverpool*, 3d mo. 8.

**SALE OF THE "GREAT BRITAIN" STEAMER.**—The Leviathan screw steamer, *Great Britain*, has, within the last few days, changed owners. It is rumoured that she has been purchased by a company who intend to carry passengers between some point on the western side of South America and San Francisco. The sum she realised is said to be 26,000*l.* The *Acadia* and *Bithonia*, which we recently mentioned as having been purchased from the North American Mail Company by the Central German Government for war steamers, left the Mersey, the former on Friday and the latter on Monday, for Antwerp, where, we believe, they will receive their armaments. Besides these vessels, the same Government have purchased the American steamer, *United States*, also to be fitted as a war vessel. The register burden of the steamers thus transferred amounts to 8500 tons, with engines of 2600-horse power. Little more than 10 years ago the largest steamer afloat belonging to this country did not exceed 900 tons register, with engines of not more than 800-horse power.—*Globe*.

**CAUTION.**—"One of the most useful articles that can be possessed is Robinson's Patent Liquid Glue."—*Times*. From the acknowledged excellence of ROBINSON'S PATENT LIQUID GLUE, which may now be had in nearly every important town in the kingdom, has arisen numerous spurious imitations. Be particular to ask for Robinson's Patent Liquid Glue—none else is genuine. Neither time nor climate, hot nor cold, affects it. It unites permanently several glass, china, wood, cast-iron, stone, or marble.—*Douglas Jerrold's Weekly Newspaper*. "An extremely valuable addition to the store of domestic requisites."—*Atlas*. In bottles, price 1*s.*—Dopd, No. 75, High Holborn, opposite the George and Blue Bear, London; may also be had of Wm. Holdell, 2, Astley's-row, Lower-road, Islington.

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## COUGH CURED AFTER AN ATTACK OF INFLUENZA.

St. Ives, Hants, January 13, 1848.

Sir,—Having been attacked by the influenza, a short time ago, it left me with a very troublesome cough—was recommended to try your Lozenges, which, I am happy to say, completely cured me, after only taking half a box of them. I shall always feel the greatest pleasure and confidence in recommending your Lozenges to my friends.

I am, Sir, your most obedient servant,

Thomas Keating, Esq. THOS. E. DAVIS.

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Reviews of the work.

We feel no hesitation in saying, that there is no member of society by whom the book will not be found useful—whether such person hold the relation of a parent, preceptor, or a clergyman.—*Sun*, Evening Paper.

J. L. Curtis, on *Manhood*, and the Causes of its Premature Decline; with Plain Directions for its Perfect Restoration. [Strange, Paternoster-row.] This is a book replete with valuable advice and information. It develops the fearful shoals on which a large proportion of human happiness, and intellect, and information, &c., are wrecked, by a simple avoidance and escape. Fortunate for a country would it be, did its youth put into practice the philanthropic and scientific maxims here laid down. One cause of matrimonial misery might then be banished from our land, and the race of the enervate be succeeded by a renewal of the hardy vigorous spirits of the olden time.—*United Kingdom Magazine*.

*Manhood*: a medical work.—To the gay and thoughtless we treat this little work will serve as a beacon to warn them of the danger attendant upon the too rash indulgence of their passions—while to some it may serve as a monitor in the hour of temptation, and to the afflicted as a sure guide to health.—*Chronicle*.

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PART THE FIRST treats of the anatomy and physiology of the reproductive organs, and is illustrated by six coloured engravings.—PART THE SECOND treats of the consequences resulting from excessive indulgence, and their lamentable effects on the system, producing mental and bodily weakness, nervous excitement, and generative incapacity; it is illustrated by three explanatory engravings.—PART THE THIRD treats of the diseases resulting from infection, either in the primary or secondary form, and contains explicit directions for their treatment. This section is illustrated by 17 coloured engravings.—PART THE FOURTH contains the means for the prevention of disease by a simple application, by which the danger of infection is obviated. This important part of the work should not escape the reader's notice.—PART THE FIFTH is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subject critically and philosophically inquired into.

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## Transactions of Scientific Bodies.

**VEEY FAIR.**—We heard a story yesterday of a man who returned home from California with gold to the amount of \$64,000, which he deposited in one of the banks. He took off his old tattered unmentionables, and was about to throw them away, but his wife, good prudent woman, took them, and with a trifling cost, she shook \$28,000 worth of gold dust out of them.—*Boston Chronicle.*

At the Western Literary and Scientific Institution, on Wednesday evening last, Mr. WILKINS gave his concluding lecture "On Electricity and Magnetism."—After a recapitulation of his observations on the two former evenings, in which he traced the science from its earliest dawn to the time when it became of the greatest value as an agent to the safety and wants of man, he proceeded to describe the printing telegraph, which consisted of a wheel, with 26 dots, answering to the 26 letters of the alphabet. This wheel was held by a detent, or tailpiece, on the end of an armature, similar to that in the bell machinery previously described; and, by a magnetic arrangement, the letter acted on at one end of the circuit would be printed on paper at the other. Davenport has discovered that certain substances were decomposed by galvanic electricity; and upon this principle another description of printing telegraph has been constructed. Iodide of starch was of a dark blue colour; iodide of potassium, somewhat blue. A current of electricity would decompose iodide of potassium, and cause the iodide to combine with starch in contact with it, giving iodide of starch. A word, or sentence, is written with a solution of heliac, sealing-wax, or other non-conducting substance, in naphtha, to enable it to be written with on a sheet of tin, bent round a cylinder, over which is a pointer, connected to the galvanic circuit, and pressing upon it—the cylinder being also a conductor. At the other extremity is a sheet of paper, saturated with a solution of iodide of potassium and starch, forming a damp conductor from a similar cylinder. As these cylinders revolve, as long as the pointer passes over the tin surface, the current is conducted to the paper, decomposes the iodide of potassium, and forms an iodide of starch, leaving dark blue lines; but the instant the pointer passes over the letters, the circuit is broken, and the paper retains its light blue colour—thus giving on the paper *fac simile* of the identical word, or sentence, written on the tin, in light blue letters, on a dark blue ground. This telegraph is, however, nearly impracticable, from the impossibility of getting two cylinders at a distance to revolve with similar velocity; and when one moves faster than the other, the letters are distorted, and often quite unintelligible. Another printing telegraph was described on the same principle—only, instead of words written on a tin plate dots and strokes of different lengths represent the 26 letters; these were cut through a slip of paper, and the pointer passing over them breaks and connects the circuit—giving a *fac simile* of the perforations on a slip of paper at the

### Proceedings of Public Companies.

**THE CHAIRMAN:** With your permission, I will now declare a bonus of 168,794<sup>a</sup>. Before that is done, allow me to say that now is the time for gentlemen to ask any questions they please. I do not intend to make a long speech, but I must be allowed to say, that I, as well as the directors around me, think that we are in a satisfactory position. (Hear, hear.) It is extremely gratifying to have had so many representatives of the Board present at this preliminary meeting, that on that occasion we held out the prospect that, by paying off the shareholders, we should be placed in a stronger position, which has been very literally fulfilled. It is important to be remembered, that on the last occasion we divided, I think, 64,770<sup>b</sup>, as a bonus; now, the figures we have to deal with to-day are 168,974<sup>c</sup>. Is anything more wanting to prove that we have made good our promises? (Hear, hear). Yes, gentlemen, we have made good our promises, and we have still kept to the same results given as from the first—viz: caution, soundness, and integrity. Now, I should like you to say, if in deciding on principles upon which we can value and estimate our liabilities, and reserve and declare bonuses, there is not room for a deal of margin, and a great latitude of judgment, and discretion, and sagacity, and foresight, and prudence, and common sense, and sound business judgment, and soundly adopted at previous divisions; therefore, the result must show to you that ours was a prudent and a wise course, or else we should not have got 168,000<sup>d</sup>, and besides, besides, a considerable reserve for fluctuations. We have been proven in all



The Compendium of British Mining.

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our calculations, and we have kept a good margin as security, upon the principle of admitting such chances only as would justify entire confidence; and if you take my word for that, it will be a mark of good confidence in the directors. (Loud applause.) You must bear in mind that the principle of adopting low premiums is only at those periods of time when they may be safely acted upon; and if low premiums and large bonuses are impossible, they are most fair and equitable, if they be equitably distributed; but to judge between man and man of what is equitable, as in the case of a hardy life which was concluded, is the difficult point, from the impossibility of us getting the matter in order hitherto. I believe that we are acting on the wisest and best principles for any society of this description. We have had mostly young lives, or to a great extent; and a succession of profits have accrued to the society, because we have had no drawbacks, except the mere office expenses—no large deductions, like in some other offices, which are only proprietary companies—nobody to take any priority, for all has been divided amongst those persons insured in the society. That being the case, I think it is really a matter of congratulation for us to be able to declare so large a sum as 168,794*l.* as a bonus on this occasion—(hear, hear)—I say so more especially, when I allude to the expectations we held out at our last quinquennial meeting. (Applause.) If you agree with me in all these matters, I shall undertake to declare a bonus of 168,794*l.* Mr. BARBER pointed out the advantages enjoyed by some institutions under the Friendly Societies' Act, with a view to the enrolment of the "Economic" under that Act, if possible. A PROPOSER said, that some of the present offices could register under the Friendly Societies' Act; there were only two that had the privilege. It was now impossible for any office to come under the benefit of that Act, as it was not intended for insurance companies, but more especially for the requirements of the poor; so that it was a wrong interpretation of the Act for insurance companies to insure large sums, such as 5000*l.* (Hear.) The CHAIRMAN: If it be so, the principle of adopting low premiums, both as regards bonuses and everything else, (Hear, hear.) He (the chairman) said, that having announced the bonus, he would now propose that a further contingent bonus of 1*l.* per cent. per annum be set aside for all parties interested in the present bonus, and on all claims accruing after the payment of five annual premiums. This resolution, as well as the report of the directors, were passed unanimously. The CHAIRMAN: I think, if you gentlemen who are present will stand by the society, we shall be able to get on the same footing as the others, in regard to receipts and outgoings. I hope what has passed has been satisfactory—(hear, hear)—and I have no doubt but the satisfaction will be equally as great when we meet each other at the next quinquennial meeting. I now propose the election of four directors—namely, Arthur Kett Barclay, Esq., Robert Davies, Esq., Archibald Hastie, Esq., M.P., and John Mondham, Esq. I must here mention, with deep regret, the loss we have met with in Mr. Barber, one of our most active, intelligent, and useful members of the board, and who has been with us from the foundation. (Hear, hear.) That gentleman possessed a large interest in the society, and had induced a vast number of his friends to insure in this institution. Taking these things into consideration, the directors have been induced to select his son, as a mark of respect, to succeed his father. The resolution was agreed to unanimously. Mr. BARLEY: I took the opportunity of insuring in this office during the first year of its establishment, and, perhaps, very few have remained for so long a period. I have seen and watched its prosperity, which I think has been very great, and has been chiefly owing to the care, zeal, and ability of our directors. (Hear, hear.) My proposal is, therefore, that we return our thanks to the chairman, deputy-chairman, and directors, for the care they have taken of our interests through all this period.—Mr. LANE seconded the vote of confidence. The motion was passed amidst acclamation. The CHAIRMAN: I am bound to speak once more in the name of my brother directors. I can truly assure you, that we have endeavored, from first to last, to serve you with zeal and uprightness in all our transactions. I said, from the first, that we should be ready to place everything upon the square, and that it should all be correct, sound, honest, and proper, the best proof of which is the fund we have at present. (Hear, hear.) You may depend upon it, that every care is taken by us, and which wise and honorable men ought to take, of the interests of such a society as this, and it is only on these grounds that we ask for the continuation of your confidence in the board of directors. (Hear, hear.) Gentlemen, I return you most sincerely many thanks, in the name of myself and the directors, for the compliment you were kind enough to pay us; we feel it very highly; we only hope that when we meet again, the result will prove to you that we have persevered in the same course which we have followed from the beginning—therefore, for the present, we wish you farewell. (Applause.)—The meeting then adjourned.

THE BIRMINGHAM PLATE GLASS COMPANY.—The annual general meeting of the Birmingham Plate Glass Company was held at the Union Inn, Birmingham, on Friday, the 9th inst.—J. B. PAXES, Esq., in the chair.—The attendance was very numerous. From the report read, it appears that, since the works were placed under the management of Mr. Hartley, great improvements have been effected. The manufacture has been brought into admirable working order; the cost of manufacture greatly reduced; the quality of the glass so much improved, that it is admitted by competent judges to be equal, if not superior, to any in the market; numerous important agencies have been established; and, in short, every anticipated improvement in the management of the company's affairs, in both the manufacturing and the commercial departments, has been effected. The balance-sheets for the two half years of 1848 were presented, and that of the second half year, in particular, was highly satisfactory. The sales have become very extensive, and are still increasing. The meeting was addressed by Messrs. Geach, Blows, Lucas, Knowles, and Lee, of Birmingham; Messrs. French and Cook, of London; Mr. Hartley, of Sunderland; and Mr. W. D. Lillingston, of Bath. The report and balance-sheet were approved and adopted; the fullest confidence was expressed in the directors; the three retiring directors, Messrs. Haines, Hodges, and Cook, were re-elected; the two auditors, Messrs. S. Walker, of Wolverhampton, and J. Boyce, of Coventry, were reappointed; and the whole proceedings were characterized by perfect unanimity.

CUNNINGHAM AND CARTER'S NEW SYSTEM OF RAILWAY PROPULSION. Having been applied to by a correspondent for some further details of the working of the model of this railway, now exhibiting at Ingram's, City-road, then he can gather from the observations in the *Mining Journal* of the 3d inst., we recommend him to pay a visit there, first having referred to a very full description, which will be found in the *Mining Journal* of Sept. 18, 1847. We feel satisfied our correspondent will not consider the hour wasted by an inspection. Having received several inquiries as to the details of working cost, we have made some inquiries on this part of the subject; and are authorised to state, that the patentees, after time for reflection and calculations of the greatest nicety, have no reason to depart from their estimates, made and published nearly two years since; these gave an average of a fraction over 3*d.* per train per mile. The following is an estimate of the daily expense of working a double line of 50 miles long, during a period of 10 hours, with trains starting from each terminus every half-hour—six trains always running on the line:—

Coal for five stationary engines, of 100-horse power each, at 5 <i>s.</i> 6 <i>d.</i> per horse-power per hour each (say, 14 tons, at 14 <i>s.</i> per ton) ..	£ 7 14 0
Wages—Enginemakers, with relief, 10 at 6 <i>s.</i> ..	3 0 0
" Stokers ditto 10 at 4 <i>s.</i> ..	2 0 0
" Cleaners ditto 10 at 2 <i>s.</i> 6 <i>d.</i> ..	1 5 0
" Drivers ditto 12 at 5 <i>s.</i> ..	3 0 0
" Grooms ditto 12 at 4 <i>s.</i> ..	2 0 0
20 men stationed on the line, 3 <i>s.</i> ..	£ 3 0 0
Repairs of engines, with depreciation, &c., at 200 <i>l.</i> per annum, each x 5 = 1000 <i>l.</i> per annum, daily proportion ..	2 15 0
Contingencies ..	4 6 0
Total ..	£ 30 0 0

Forty trains, at 15*s.* per train=30*l.*, being a fraction over 3*d.* per train per mile, independent of a saving of one-third of the present expense in the maintenance of way. In our notice on the 3d inst., we took the working cost of the locomotive system at 2*s.* 2*d.* per train per mile. This was an error as a general statement—it being the imperfect system on the South Devon line that had cost this amount. The general cost on the narrow gauge lines must be taken at much less—probably, from 1*s.* 2*d.* to 1*s.* 6*d.* per train per mile; but allowing even the lower sum as the minimum, shows a saving in favour of the system under notice of 10*d.* per train per mile, or 90*l.* per day on the above number of trains—being a reduction of 75 per cent. in working expenses.

In addition to this, the system enables stationmasters to regulate the number and time of their trains to the contingencies of the day, and, in the event of fairs, races, &c., trains could be dispatched at shorter intervals than usual—the only difference in cost being the working the stationary engines at a somewhat higher speed, the power in the exhaust tube being always available as long as the engines work. We know more than one party, who, after a superficial view of the system, thought but little of its capabilities, have, on being induced more closely to investigate the principle, been satisfied of its merits, and that it possesses all the essentials for successful railway propulsion.

NEW DISTANCE SIGNAL ON THE SOUTH-WESTERN.—A deputation of gentlemen connected with the North-Western, Great Western, and the Eastern Counties Railways, were at the Kingston-on-Thames station, on Monday, to minutely inspect the new distance signal which has been fixed up there, said to be the invention of Cornelius Stovin, Esq., general manager of traffic on the South-Western Railway. The signal man went through the various changes of the apparatus, which appeared to be performed with great ease, and with but comparatively little trouble to those working the machine, although the crank turned was full 600 yards from the coloured signal. The transitions from white to green, and from green to red, were effected almost instantaneously, capable of announcing danger beyond the aforesaid distance, at least three-fourths of a mile. This signal has now been in constant use, when required at the Kingston station for the last six months, and has never failed. It has undergone several important alterations and improvements since its erection, under the observation of the inventor; so that as length it has been found to be so far complete, that the company have determined on fixing similar signals at all the stations on their line where such may be deemed necessary.

St. Ives CONSOLS TIN MINE, in the parish of St. Ives, has been worked for upwards of 30 years, and made large profits. Owing, however, to the low price of tin, and heavy cost of working, the profits of late years have been small. The present advance in tin will give new life to the concern, and a dividend of 5*l.* per share has been lately declared. The shares being principally in the hands of private individuals, the statistics would not be of much interest to the public, even if procurable; but the formation of tin ore in the mine is so peculiar, that I give it at some length. The formation is called a *carbena* (generally termed a dropper from a lode in irregular masses), which joins the standard lode at a depth of about 80 fms., and the part by which it is united is not more than a few inches square. From that place it has been worked, perhaps 120 fms. in a south-easterly direction, until, tending continually downwards, it reaches the depth of nearly 100 fms. Its greatest height is about 10 fms., and its largest breadth about the same; but the average dimensions may be 4 fms. high, by 10 feet or 12 feet wide; its bulk, however, is subject to very great irregularity. It exhibits few of the usual characters of a lode, as it is bounded above, below, and on either side, by the usual granite; and it has an irregular dip of from 45° to 80° towards the south-west. It is chiefly composed of felspar, quartz, schorl, and tin ore, but in many places it contains fluor chlorite, common and blistered copper pyrites, iron pyrites, and vitreous copper ore. About 80 fms. from the lode, it falls in with, and takes the direction of, the *middle brown*, and they continue side by side (the *carbena* on the west) for about 25 fms. The *carbena* then becomes a little mixed with the substance of the *traw*, and in a few fathoms farther, the very felspathic disintegrated granite of which the latter is composed is gradually entirely replaced by a mixture of schorl, quartz, and tin ore, closely resembling the composition of the *carbena*, as long as the direction continues that of the *traw*. At length the *carbena* takes a bend, and goes off at right angles towards the north-east, whilst the *traw* continues its course, and gradually becomes more granitic, although it still retains traces of the *carbena* for some fathoms; but at last it resumes the felspathic and disintegrated characters common to the *traw*. Immediately east of the *traw*, the *carbena* increases to enormous dimensions, and is worked for at least 10 fms. in length, breadth, and height. The scattered lights, the great number of miners in their soiled and torn working dress, the pillars and beams of wood which support the roof and walls, the rock lining this vast cavern, all dimly and at intervals discerned by flickering and uncertain gleams, produce a very striking and uncommon effect. From this large mass, shoots, branches, pipes, bunches, and other irregular protuberances, strike off in every direction; and wherever there is an unusual enlargement of the *carbena*, it is invariably found to occur at the crossing or union of two or more of these, which may be called the *limbs*. Some of them bear about east and west, and two of them, called Williams's and Kempe's lodes, have rather more resemblance to veins than is usual in the *carbena*; but these are for the most part cut off by the granite above, below, and at either end, and these abrupt terminations are often not on joints in the rock. Some of these bunches pass off diagonally from the main body, and, when followed, lead to other strings, which are extremely irregular in their direction, and are also cut out by the granite. These again send off shoots, which also often open into short vein-like masses, and these may, in their turn, throw off strings, both to the *carbena* and to its subordinate branches. Throughout there is a regular mineral transition from the substance of the *carbena* to the contiguous granite; and the composition thereof, like that of the lode, seems equally to depend on the nature of the country. For where the granite is cross-grained, with large crystals of white felspar, there is but little tin ore; and this, on the contrary, abounds where the granite is more uniform in its aggregation, and the felspar crystals pink or pale green, and not very clearly defined. The whole may be described as a network of pipes, strings, branches, shoots, and veins, converging into one grand trunk, which extends to the south-east, and dips, in the same direction, about 1 in 6; on all sides surrounded by the hard granite, but nowhere extending to the surface.

[To be continued in next week's Mining Journal.]

Mining Correspondence.

BRITISH MINES.

ASHBURN UNITED.—Capt. J. Keriak (March 12) reports.—The 55 fm. level, east of Hobson's, is producing fair returns of tinstuff; we are stopping the end, and taking 6 fms. over; the branch is 16 in. wide, producing 1 cwt. 3 qrs. black tin per ton of stuff. I have nothing particular to add regarding the other pitches and bargains since my last report. I expect to have from 4 to 5 tons of tin ready to weigh off at the end of the present week.

BARRISTOWN.—Capt. T. Angove (March 10) reports.—The lode in the 16 fm. level east, is about 23 ft. wide, producing rather under 1 ton of lead per fm.; it is getting more towards the bottom of the end; the stopes in the back of this level are rather improved, producing over 1 ton of lead per fm. We have not discovered the lode in the adit and driving shaft; the ground is harder, and different from any we have hitherto seen in the mine. We have engaged a vessel (the *Mary*, of Falmouth) to take from 20 to 30 tons of lead to the ticketing at Holywell.

BEDEFORD UNITED.—Captain James Phillips (March 14) reports.—At Wheal Marquis, the ground in the 103 fm. level south is without alteration. There has been no lead taken down in the 90 fm. level east; in the winze in this level the lode is from 2 to 3 ft. wide, and worth from 70*l.* to 80*l.* per fm. In the 70 fm. level east, we are driving by the side of the lode. The pitches look favourable.

BRYN-AR-IAN.—Capt. Sampson Trevelhan (March 12) reports.—The shaft sinking under the adit level is looking much as usual; the lode is 6 ft. wide, with a branch of ore, the north part yielding about 4 tons per fm.; we have not sunk anything in the winze, west from this shaft, since last Saturday week, as the men have been cutting a pit, and, in doing so, they discovered another part of the lode further north, which appears to be about 3 ft. wide, with a good mixture of lead ore, and we intend to strip down some fathoms in the lode, to ascertain its value, before we again commence sinking further. The adit level east is looking much as last reported.—A lode 7 ft. wide, with small branches of ore. I expect we shall get the crusher in a fortnight, as I have received a letter from the foundry this day to that effect, and the water-course will be completed this week, so I hope we shall soon get a water-wheel, and shortly after that we shall be in the market with a parcel of lead ore.

CALLINGTON.—Captain J. T. Phillips (March 12) reports.—In the north engine-shaft, sinking under the 112 fm. level, the ground is a little more favourable; we have cut the lead lode in this level in a very congenial channel of clay-slate, and are now opening ground that will work at a moderate tribute. In the 100 fathom level north we have fallen in with a branch of the great cross-course; the lode is producing silver-lead ores. In the 50 end the lode is unproductive. In the 30 south we are opening tribute ground; driving west in this level, on the Kelly Bray lode, we find it from 1 to 3 ft. wide, with good stones of copper ore. In the 70 east we have a change of ground; the appearance of the lode on the part we are carrying is rather flattering, being intermixed with branches of spar and copper ore, the main part of the lode is to the south, which we have just now commenced to cut through, and expect a bunch of copper ore is near at hand. At the south mine, in the 125 fm. level, both north and south, the lode is producing silver-lead ores. In the 112 fm. level, in both directions, we are opening tribute ground; the same remark will hold good for the 100 north and the 70 south. In the 40 fm. level south the lode is producing silver-lead ores.

CARWINNING HILL.—The agent reports.—Three tons of ore, worth from 15*l.* to 20*l.* per ton, will be shipped this week; the ground has become very hard. The workings have not gone on so rapidly for the last 14 days, on account of air-pipes being laid in the north and south cross-cut.

CEFN GWYN.—Capt. S. Trevelhan (March 12) reports.—There is but little alteration in the appearance of this mine since I last wrote you. The lode in the adit level, driving west, is 7 ft. wide, composed of spar, kyllus, and Jack, with small branches of lead ore. The winze sinking under the adit level, east from the cross-cut, is rather improved since last reported; the lode is 8 ft. wide, 4 ft. of which is good saving work, and appears to be getting better as we go down.

CWM ERWIN.—Captains A. Francis and S. Nicholls (March 10) report.—We have just let the following bargains:—viz.: the 20 fm. level east, at 105*l.* per fm.; the stopes below the end, at 47*l.* 6*d.* per fm.; the rise over the 20 fm. level, west of the engine-shaft, at 110*l.* per fm. The sink under the 10 fm. level, to hole to the rise, to be carried 12 ft. long, at 80*l.* per fm.; and a stoppe over the 10 fm. level, about 15 fms. west of the engine-shaft, at 50*l.* per fm. Our 30 fm. level east has considerably improved since last week, and will now yield half a ton of ore per fm.; the stopes in this level will yield about 10 to 12 cwt. of ore per fm.; and the rise over the 20 west about 8 cwt. per fm. We have communicated our first stoppe, east of the engine-shaft, to the old workings, and also another stoppe, about 15 fms. west of the winze-shaft. We have put these men to sink under the 10 fm. level, and hope we shall be able to get a hole through, at the rise, in another fortnight, which will open a good piece of ore ground to take away. There is now only one stoppe working over the 10 fm. level, which is turning out about 8 or 9 cwt. of ore per fm. We shall attach our new winze at the winze-shaft about Thursday next, and hope to get the water in fork on the following Monday. We have now broken many hundreds of kibbles of ore stuff, which we could not draw last month, in consequence of preparing our winze-shaft for the pitwork, &c. We shall sample on the 17th inst. about 30 tons of ore.

DEAN PRIOR AND BUCKFASTLEIGH.—Capt. H. Choate (March 7) reports.—In the 20 fm. level, driving west, the lode still maintains its size, composed of capel and spar; at present unproductive. In the 40 fm. level, west of cross-cut, the lode in the present adit is about 2 feet thick, composed of spar, prlan, and flookan; driven west of cross-cut 14 fms. 4 ft. In the end, east of this level, no alteration in the past week; driven east of cross-cut about 10 fms. We have commenced cutting on the lode west

of the present workings, in Mr. Buller's land, in order to ascertain its properties, size, &c., of which I shall be able to state more particularly in my next report.—March 14.—In the 90 fm. level west there is no improvement in the past week. In the 40 fm. level, west of cross-cut, the lode is about 24 ft. wide, composed of spar, flookan, and capel, with spots of ore; I have put down a man to cut into the hanging wall, to ascertain if there is any more of the lode to the south; the lode in the end, east of cross-cut, is composed chiefly of spar; the branch to the south is getting nearer the main part of the lode, the horse of kyllus between is about 2 feet thick; we have cut through the south branch, which is 6 in. thick, composed of maulic, spar, and capel; we have commenced sinking on the branch or shoot of ore in the bottom of the level, and the men have blasted a hole in the lode this morning, broke some good stones of yellow ore. I stated in my last report that we had commenced cutting, in order to trace off the lode in Mr. Buller's land; we have discovered a very promising lode, about 4 ft. wide, composed of spar, capel, maulic, flookan, and flookan; the lode in the back is farther south than was anticipated; we shall open a few more pits on its course, and, in so doing, we shall ascertain as to its rise, &c.

EAST CROWDALE.—Capt. S. Paul (March 10) reports.—The ground in Diamond's engine-shaft is favourable for sinking in, being composed of a bit of kyllus, intermixed with branches of spar. The north branch, mentioned in my last report, is increasing in size, but is not quite so good for tin, although it produces some good work for tin at times. Thomas's lode, in the adit level west, is improved in appearance since my last report; the kyllus, by which the lode was rather disordered, is wearing out, and giving place to peach, which is a more favourable stratum for tin; the end at present produces about 30*l.* worth of tin to the fathom, but I hope to state an increase in the value in my next report; the part of the lode which was carrying is composed of peach, prlan, spar, and tin. Tippett's stoppe, in the back of this level, looks well, we are carrying about 7 ft. of the lode, which is composed of peach, prlan, maulic, and tin, worth about 45*l.* per fm. Paul's stoppe, to the east, is in a poor piece of lode at present, but about the middle of next week we shall get into the tin ground, when I hope to give a favourable account of this piece.

EXMOOR WHEEL ELIZA.—Captains W. H. Whitford and Thos. Dunn (March 14) report.—The engine-shaft is sunk 10 fms. below the 12 fm. level. There are 2 fms. more to sink to complete the lift, and as the ground is more favourable than it has been heretofore, we anticipate its completion in about four weeks from this date. We have been a good while looking for the ground to be softer contiguous to the lode; a short time will tell most importantly on this speculation. We have very presumptive evidences to warrant our expectations of the ultimate success of this mine.

HAWKMOOR.—Captain James Richards (March 14) reports.—The lode in the 20 fm. level, east of the old mine's engine-shaft, is 23 ft. wide, and will yield 7 tons of good ore per fm.; in this level west the lode is 3 ft. wide, 18 in. of which is good saving work. I anticipate a great improvement in this end shortly, as it is now near the cross-course, about which the shoot of ore in the 10 fm. level was discovered. The lode in the back of the 16 fm. level is 2 ft. wide, producing 5 tons of ore per fm. We sampled and weighed, at Calstock Quay, on Friday last, 31 tons 18 cwt. 1 qr. good quality ore.

HOLMBUSH.—Captain W. Lean (March 13) reports.—The ground in the 132 fm. level, west of the great cross-course, is favourable. In the 120 fm. level cross-cut, south-east of Hitchen's shaft, we have also favourable ground, and hope to be able to reach the south branch this month; the lode in the 120 fm. level south is 3 ft. wide, producing a good deal of ore, and leaving tribute ground in the back and bottom of the level. The lode in the 110 fm. level south is 4 ft. wide, composed of quartz and lead-saving work. We have driven 5 fms. through the great cross-course, at the 100 fm. level, east of the flap-jack lode, and hope soon to be entirely free from it, to enable us to drive north to intersect the counter part of the lode. There is nothing new in the tribute department to call for a remark.

KIRKCUDBRIGHTSHIRE.—The agent (March 10) reports.—We have favourable ground for sinking in the engine-shaft; the lode is 3 ft. wide, composed of spar and spots of ore, a very kindly vein. The lode in the 50 end east is 3 ft. wide, with a good rib of ore, mixed with Jack, in the middle of the end, and the ground being more compact and less black than in the level above, it has improved in appearance this week. The lode in the 40 end west is the same as last week, but with a greater quantity of spar, with a small bunchy branch of ore in it, yielding 4 or 5 cwt. to the fm. We have made no further discovery in the cross-cut east yet, and the lode in the 20 end is still poor. The ground has not yet assumed that black appearance which it has in the level below.

MENDIP HILLS.—Capt. F. C. Harper (March 12) reports.—In the slag department, we have, during the past week, melted the pile of slags mentioned in my last report, the produce of which is much the same as on former occasions—viz.: about 3 cwt. of metal per ton of slags.—The appearance of the beds of stuff in Charter-House Valley continues without any material alteration; the open cutting, which is still being extended towards the eastern part of the ground, is about 24 ft. deep, 15 ft. of which is stuff intermixed with some good quality slags and almes. In Ubley slag ground we continue to press forward, as fast as possible, with the new machinery, and have new dressing-floors. Our principal operations, are at the present moment, levelling the ground for the builders, laying open a cutting for the purpose of taking the water, rubbish, &c., from the intended floors, and also in driving a lobby from the side of the valley into Stainby's shaft. Should nothing intervene, we hope to see some washing-stroke in operation by the latter part of the present week.

MINERAL COURT.—Capt. J. Webb reports.—Since the meeting in May last, the tributors have driven the 8 fathom level east about 18 fms., and will have returned, to the end of February, about 7 tons of tin from this level and back, but principally from the level itself. The price of the tin sold has been from 40*l.* to 54*l.* per ton—but, at the near sale, from the price of tin, we have no cause for complaint. As there has been much improvement from the adit level, and the tin has been found higher in the last 3 fathoms driven by the tributors, they broke and returned a ton of tin, which, at the present price, gives a value of 20*l.* per fm., and the lode now standing in the end is equally good. Out of the 23 fms. for which this level is extended from the engine-shaft, there has been a good lode for 18 fms., and for the last 5 fms. it has been a rich lode; throughout the level the lode is much better, and more productive in the bottom flap in the back; this level has not been driven westward of the shaft. The quality of the tin has been much improved from the adit level, and it is generally considered by the employers to produce better metal than any other tin mine in Cornwall, and it consequently commands the first price of the day. From the returns of tin, and appearances of the lode in our 8 fm. level, and from its great improvement in this level from what it was in the adit level, it is my firm opinion, that at a 20 fm. level, when opened for the tributors, it will be a productive and profitable mine. We cannot, of course, know what is in a lode further than we have opened it, but I never saw in any mine greater quantities of future success, or to make a more lasting mine. I recommend that the engine-shaft should at once be sunk to a 20 fm. level, and levels driven east and west at that depth, to open ground for the tributors; that the 8 fm. level should be continued east on tubwork, and the backs set on tribute, as soon as the ground is fairly opened. To effect these necessary objects, and to enable us to take away the tin with the greatest advantage to the adventurers, an outlay of about 800*l.* is requisite, which it is proposed to raise by the addition of new shares, so as to fill up the share list to the original number of 350, each share yielding 4*l.* 4*s.* each, or such other price as may be agreed. The engine-shaft would give the sum necessary for the proposed outlay, without any expense to the present adventurers. Our water engine worked all through the last year, and kept the water to our present level; and, should the next season prove equally favourable, we may calculate on keeping the water at the 20 fm. level throughout the year, and in winter we could readily work her at a 40 fm. level below the adit.

SOUTH WHEEL TRELAUNY.—Capt. Wm. Jenkin (March 12) reports.—The lode in the 30 fm. level is 2 ft. wide, with two regular veins, also a moderate underlie adit, and ground favourable, and also much more kindly than it has been for some time past, composed of fluor-spar, maulic, kyllus, barytes, and capels, with sprigs of lead and spots of copper ore. We are also driving cross-cut west on the same level, but have not intersected any lode nor branch since last reported.

TAMAR SILVER-LEAD.—Capt. James Sprague (March 12) reports.—In the 190 and 10 fms. level has been taken down since last reported on. In the 175 end the lode is 23 ft. wide, 1 ft. of which is good work, and the rest is waste. In the 160 and the lode work well, and is producing a small quantity of ore. In the 145 and the lode is 20 in. wide, composed of can and ore, good saving work. In the 135 and the lode is 18 in. wide, rich work. We anticipate the incline shaft will be down to the 135 fm. level by the end of this month. At North Tamar we have intersected the lode in the 80 fm. level; its size varies from 1 ft. to 18 in. wide. In the 70 end the lode is 4 ft. wide, composed of capel, can, and ore, but not rich for the latter. In the 60 end the lode is 2 ft. wide, composed of capel, and some ore. We sampled on Saturday, the 3d inst., computed 91 tons of rich silver-lead ore.

TINCROFT.—Captain P. Floyd (March 12) reports.—At Palmer's shaft, on East Pool lode, in the 90 fm. level west, the lode is 14 ft. wide, with occasional veins of capel ore. In the 80 fm. level west the lode is 10 ft. wide, with capel, for copper. At North Tamar, the lode in the 100 fm. level east is worth 9*l.* per fm. for copper; in the 100 fm. level west the lode is worth 6*l.* per fm. for copper. In the 90 fm. level east the lode is worth 7*l.* per fm. for copper; in the 90 fm. level west the lode is worth 20*l.* per fm. for copper. In the 80 fm. level east of Willoughby's shaft, the lode is worth 10*l.* per fm. for tin; in the winze sinking below this level the lode is worth 6*l.* per fm. for tin and copper; in the winze sinking west of engine-shaft, below this level, the lode is worth 9*l.* per fm. for copper. On Highbury lode, in the 125 fm. level, east of Martin's adit, the lode is worth 11*l.* per fm. for tin. In the 145 fm. level, east of Martin's adit, the lode is worth 11*l.* per fm. for tin. The 132 fm. level, east of Martin's adit, is worth 20*l.* per fm. for tin; the lode in the west end, in the same level, is worth 15*l.* per fm. for tin; the stopes in the back of this level, east and west of the shaft, are worth 17*l.* per fm. for tin. The winze sinking below the 120 fm. level is worth 10*l.* per fm. for tin. On Chaplin's lode, in the 160 fm. level, west of Downright shaft, the lode is worth 7*l.* per fm. for tin. In the 90 fm. level west of the lode is worth 14*l.* per fm. for tin and copper; in the winze sinking below the 80 fm. level the lode is worth 10*l.* per fm. for copper. In the winze sinking below the 80 fm. level the lode is worth 10*l.* per fm. for tin. At Blight's shaft, we have finished cutting pit, &c., in the 60 fm. level, and have commenced sinking the shaft below that level. Chaplin's shaft, sinking below the 72 fm. level, on the south lode, is worth 9*l.* per fm. for tin and copper. We have suspended sinking Stainby's shaft for the present, and are now preparing to drive the 24 fm. from East Wheel Grotty towards this shaft.

TREHANE.—Capt. S. Richards (March 12) reports.—The lode in the 55 fm. level north is 24 ft. wide, composed of spar, can, and lead, worth 4*l.* of lead per fm. In the stopes in the back of this level, north and south, the lode will average about 5 ft. wide, and is producing 9 cwt. of lead per fm. In the 45 fm. level north the lode is improved since last report, now worth 1*l.* of a ton per fm. The lode in the stopes in the back of this level, is producing on an average 1 ton of lead per fm. In the cross-cut west, in the 30 fm. level there is no alteration of importance.

TRELEIGH CONSOLS.—Capt. W. Symons (March 10) reports.—Garden's shaft, below the 115, is sinking in the country. In the 115 fm. level, west of ditto, the lode is 4 ft. wide, rather more promising, with occasional stones of ore, and very wet. In the 100, west of ditto, lode 1 ft. wide, no mineral. In the 90, west of ditto, cross-cutting to the north part of the lode. In the 60, west of ditto, lode 3 ft. wide, producing stones of ore—rather more promising. In the 50, east of Wheal Parent, lode 20 in. wide; it contains spar and maulic. In the 30, west of ditto, lode 24 ft. wide, with a very favourable appearance, and stones of ore, maulic, and spar. In the winze below the adit, lode split into branches—no mineral. In the rise above the adit, lode about 15 in. wide, worth 6*l.* per fathom.

WEST WHEEL JEWEL.—Capt. R. Johns (March 12) reports.—In the 70 fm. level, west of Williams's cross-course, on Wheal Jewel lode, the lode is 14 ft. wide, grey throughout. In the 57 fm. level, west of Williams's cross-course, on the same lode, the lode is unproductive. The winze in the bottom of the 47 fm. level, west of Williams's cross-course, on the same lode, the lode is 30 in. wide, and worth 8*l.* per fm. In the deep adit, west of Hodges's cross-course, on the same lode, the lode not taken down in the past week. In the 30 fm. level, west of Quarry shaft, on Tolcarne tin lode, the lode is unproductive. In the stopes east of Fryer's winze, in the back of the 12 fm. level, on the same lode, the lode is worth 13*l.* per fm.; in the stopes west of this winze, in the back of the 12 fm. level, the lode is worth 20*l.* per fm.; the stopes in the bottom of the 19 fm. level, east of Trembling's shaft, are worth 30*l.* per fm.; the stopes in the bottom of this level, east of Trembling's winze, are worth 20*l.* per fm. (These are all working on tribute.)







## GREAT ROUGH TOR CONSOLS MINING COMPANY.

The two-monthly meeting of shareholders was held at the offices, 50, Threadneedle-street, on Monday, the 12th inst., when the minutes of the last meeting (held 29th January) were read and approved, and the mine cost-sheet for the month of January, amounting to 2652 15s. 3d., and the purser's cash account, showing a balance of 1882 4s. 11d. against the adventurers, were examined and passed. The liabilities to be provided for before the next meeting in May were estimated as follows:—Cost for February, 2402; March, 2802; April, 2802; balance due to purser, 1882 4s. 11d. = 9882 4s. 11d. No call, however, was made. A letter from one of the largest shareholders was read, in which he referred to the amount of calls which were in arrear, amounting, as stated at the last meeting, to 4762, and that he should cause to be proposed at this meeting that all shares in arrear of calls be absolutely forfeited, in conformity with the nineteenth rule of the adventure. The Purser then reported that the calls now in arrear amounted to 6642 on 135 shares.

Whereupon it was resolved unanimously, that the 135 shares, upon which calls, amounting to 6642, were unpaid, be declared absolutely forfeited, and the same be vested in the name of the purser, in conformity with the nineteenth and twentieth rules of this adventure.

A letter from a shareholder was then read, stating that he was willing to take the whole of the forfeited shares off the hands of the adventurers in one lot, and he would engage to pay all the arrears of calls due thereon, amounting to 6642—whereupon it was resolved, that the purser do call a special general meeting of the shareholders to be held on Saturday, the 24th March, to take into consideration the proposal of the shareholder to take the whole of the 135 forfeited shares in one lot, he engaging to pay all the arrears of calls due thereon, amounting to the sum of 6642, and to determine thereon.—The following letter from Captain Joel Hitchins, dated Great Rough Consols, March 10, was read to the meeting:—

"Up to this moment, and the men have now left work for the week, there is no alteration whatever in the appearance here since I last wrote you. The cross-cut at Thomas's is now 144 fms. from the shaft: the ground in the end is still very favourable, both as to its congeniality for the production of minerals in lodes embedded in it, and for the prosecution of the end further south; should the lode have altered its underlie from 3 feet to 2 feet in a fathom, which is not unlikely to be the case, we still have 4 fms. more to drive to intersect it. The cost for February (last month) will be within 17. or 22. of 2402; the estimated cost for March will be about 2802, it being a five weeks' month, and we shall be obliged to replenish our stock of candles; April will be from 2602 to 2802. In this month I expect some additional men will be employed in driving on the lode east and west of Thomas's, allowance for which is made in the estimate."

**ALFRED CONSOLS.**—At a meeting of adventurers, held at the offices, George-yard, Lombard-street, the accounts were examined and passed, showing—Balance last account, 3s. 4d.; labour cost, eight months, to January, 1849, inclusive, 17172 14s. 3d.; merchants' bills, 6002 3s.—23187 0s. 7d.—By sale of copper ore, 13th July, 732 12s. 6d.; ditto 9th Nov., 2351 18s. 7d.; ditto January 11th, 1632 1s. 2d.; lead ore sold, 4th Nov., 2282 18s. 5d.; materials, 702 9s. 4d.; interest cost, 32 11s. 11d.; sundries, 92 17s. 11d. (less lords' dues, 552 12s. 1d.)—10292 17s. 9d.; leaving balance against the adventurers of 12882 2s. 10d.—It was resolved, that the purser take legal proceedings against all defaulters on payment of calls; that the offer of the purser and secretary to reduce their salaries to 42. 4s. per month each till there be an improvement, be accepted; that the salary of Capt. White be reduced to 32. 4s. per month; and that the purser be instructed to repeat the application to the lords for a remission of the dues.—A report, from Capt. White, was read, which stated that, in the 50 fm. level, the lode varied in size, from 9 to 4 ft., producing good stones of yellow ore, having a promising appearance. In the 40 fm. level, the lode near the cross-course produced some good copper ore; the 40 west is driven through a good lode, but lately poor—the principal object recommended is sinking the engine-shaft.

**BIRCH TOR AND VITIFER MINES.**—At a meeting of shareholders, held at the secretary's office, Plymouth—Mr. G. FREAN, in the chair—it was resolved, that legal steps be immediately taken against all defaulters, to compel the payment of calls in arrear, and that if the large arrears of calls due by Mr. F. Still and Mr. Walter Truscott be not paid within 30 days, their shares to be forfeited. A report from Capt. Edwards, the agent, was read, which stated that the shaft had been sunk 5 fms. below adit, on a lode averaging in value about 15s. per fm. The cross-cut, from Birch Tor to the North lode, had been driven about 18 fms. through an important part of the mine, as, when completed, it will lay open thousands of fathoms of backs, below very large workings of the ancients. On the Vitifer lode, the shaft had been sunk 18 fms. from surface; three fathoms below adit the lode had been intersected, and worth from 122 to 152 per fm., of a promising character, and, without improvement, would work at a low tribute. The shaft would be down to the 10 fm. level by the middle of March, when levels were to be extended east and west, to lay open backs. There was every prospect of its becoming a profitable mine.

**DEVON AND COURTENAY CONSOLS.**—At a meeting of adventurers, held on the 13th inst.—J. DIAMOND, Esq., in the chair—the accounts were examined and passed, showing—Balance last account, 552 18s.; copper ore sold, 982 9s. 2d.; call of 5s. per share, 1602 15s.—3152 2s. 2d.—By labour cost, Jan., 902 19s. 5d.; ditto Feb., 832 9s. 8d.; leaving a balance in favour of the company, when the call is paid, of 1402 13s. 1d.—It was resolved that three shares belonging to Mr. W. Mayer, four to Mr. W. Bowden, and two to Mr. J. Holman, be forfeited for non-payment of calls.—A call of 5s. per share was made, and a report, from Capt. N. Secombe, was read, which stated that the gossan lode, in the 40 fm. level west, was from 1 to 2½ ft. wide, composed of munda, quartz, and peach, producing in some places good stones of ore; and in the last few feet there appeared a considerable improvement; and, from the large quantities of gossan, it was expected considerable returns of copper would be realised. The lode in the 50 fathom level east was 2½ ft. wide, composed of strong capels and munda, and producing in some places saving work. A bargain had been set to two men to rise, in the back of this level, on a lode which was producing 1½ ton of copper ore per fm.

**SOUTHERN AND WESTERN MINING COMPANY OF IRELAND.**—The ordinary annual meeting of shareholders, is to be held on Monday next, the 19th inst., when the directors' report, and that of the mining superintendent, together with the accounts and balance sheet, will be laid before them. Four directors, J. Carmichael, F. Bell, J. Leahy, and H. J. Hewitt, Esqrs., go out of office as directors by rotation, but are eligible for re-election. Two auditors will also be elected, in the room of W. C. Logan and A. Carr, Esqrs., and their future remuneration settled.

**WELLINGTON.**—At a meeting of adventurers, held at the offices, George-yard, Lombard-street, on the 8th inst., the accounts were examined and passed, showing—Balance last account, 3172 11s. 7d.; sale of copper ore, December 14, 4862 17s.; ditto instuff, November 25, 342 8s. 9d. (less lords' dues, 282 19s.) = 8092 13s. 4d.—By labour cost, Nov., 1572 14s. 3d.; ditto Dec., 2062 4s. 3d.; merchants' bills, 732 14s. 9d.—4372 13s. 3d.; leaving balance in favour of adventurers, 3720 0s. 1d.—It was resolved, that Mr. James Gundry's salary be increased to 42. 4s. per month.—A report from Capt. White was read, which stated that the ground in the 22 fm. level west would be worked at 2s. in 17, good for copper and tin; the 22 east contained the best course of copper ore yet found in the mine. In the 12 fm. level, east of Parolly shaft, 8 fms. of ground were set at 2s. 3d. in 17; in the 12 fm. level, west of engine-shaft, the lode has been poor. The next sampling day would be in about three weeks time; the quantity at surface was about 65 tons, and it was expected the sampling would not be less than last.

## MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

**BIRCH TOR.**—Here we are looking very well. The Birch Tor lode, in Pridoux shaft, is improving in quality as it goes down; and in Vitifer, the lode in Dunstan's shaft holds its own very well. The former is worth about 202 per fm., and the latter about 152.

**CARADON COPPER.**—We are now sinking under the 30 fathom level, on the Bookan of the lode, where we have occasionally good stones of ore, and the water oozing from the lode is very indicative of there being a good course of ore near at hand. We shall, in this way, sink a few fathoms under the 30 fathom level before we cut into the lode, and from which, at the intersection, we have reason to hope for a more ore lode than we have as yet had.

**HAWKMOOR.**—The lode in the 20 fm. level is at this moment worth 402 per fm.; but we have already sampled 47 tons of ore, and shall have at least 20 tons more ready for market in about three weeks hence; and I have little doubt that, in a few months, the mine will be yielding a profit.

**KINGSETT AND BEDFORD.**—They have four copper lodes looking very promising, and four lead lodes, giving a good deal of lead; and I have no doubt of being well remunerated for the outlay at no distant period. Some of our lead lodes look as fine as can be seen; and I think Kingsett and Bedford to be a very fair speculation.

**PLYMOUTH WHEAL YEOLEND.**—The lode has not been found below the slide as yet, and an improvement cannot be expected before this be done.

**WHEAL ASH.**—The lode in the shaft is very promising, but it is not yet valuable; it is expected daily that a course of ore will be found here.

**WHEAL FRANCO.**—The bottom levels in this mine are the same as last reported on, but we are expecting daily to get ore in the 47 fm. level, as there is a tolerable good lode going down this end in the bottom of the 32 fm. level. There is a tolerable good lode also going down in the 47, but this is several fathoms before the 62; therefore, we do not expect much change here for some little time to come.

**WHEAL PROSEPER.**—This little mine is in Peter Tavy, and it is said they have a lode in the shaft, sinking below the adit, worth from 252 to 302 per fm. I have this from a source I can put confidence in, but have not seen it.

## NEW STEAM GENERATOR—IMPROVED LOCOMOTIVE.

[Specification of patent granted to Mr. W. Sager, Rochdale, for certain improved means and apparatus for effecting the transit or conveyance of goods, passengers, and correspondence, by land or water, and for other such purposes; part or parts of which constitute a new and improved method of generating steam, which improvement is applicable to other purposes to which steam is generally applied as a motive power.]—Mech. Mag.

1. The patentee first describes an improved steam generator. It is constructed with three rows of fire-bars, one above the other, and with a sufficient space between the rows to contain a number of oval or elliptical vessels, fixed longitudinally, and closed at the ends by flanges, or other suitable means. Between every two of these vessels there is placed a smaller vessel, of the same shape, and fixed above each of the larger vessels there is a square-shaped one, with a concave bottom. Through the centre of each of the three different sets of vessels there passes a feed-pipe, which is perforated on the under half of its circumference, whereby the water is maintained at a fixed level by a force-pump; or the water may be injected through the perforations of the feed-pipes upon the heated surfaces of the vessels.

The lower half of the large, and the whole of the small, elliptical vessels are imbedded in fuel—the latter having their upper ends protected from burning by suitable covers. Horizontal plates, stretching from end to end, are fixed to the sides of the square vessels, and have the effect of confining the heated air and smoke, and causing them to pass over the top surfaces of the large elliptical vessels and through the flues in the square-shaped ones. In the upper part of each vessel, and considerably above the water line, there is a pipe which conducts the steam directly to the cylinders or to a steam chamber. This apparatus carries at the top a water vessel, which extends its whole length, and is concave on its under surface; and it has a flue through which the steam, produced by the combustion of the fuel, escapes to the chimney, as well as the side with vertical reservoirs, in which the feed water is contained and partially heated before passing to the steam generators; and it is provided with doors for introducing the fuel, and with dampers for regulating the admission of atmospheric air. The feed and steam-pipes are fitted with stop-cocks, and each vessel with water gauges and safety-valves.

2. We are next presented with an improved locomotive, which consists of a frame fitted with two running wheels, and a driving wheel composed of four parts. The inner halves of the peripheries of the two inside parts are cut out, so that the driving wheel, as well as the peripheries of the other two parts, bevelled off outwards. The driving wheel is keyed upon a transverse shaft, having cranks at each end, to which the piston-rods of two horizontal steam cylinders are attached. These steam cylinders are connected by iron bands, and are fixed, together with the transverse shaft, upon a longitudinal shaft, which is supported in bearings in the frame, and furnished with a handle by which it may be made to turn. As long as the longitudinal shaft remains in the first position—that is to say, as long as the cylinders are in the upright position, the driving wheel is turned round, and the driving wheel made to run upon one of its bevelled sides, the engine will describe a curve proportionate to the extent to which the longitudinal shaft is turned round.

Or the driving-wheel may be made with a straight periphery, and supported, with the engine, in a circular horizontal frame, which may be caused to move round in the main frame by means of a toothed wheel, keyed upon a vertical spindle, gearing into the pinion of the periphery of the frame, and the driving wheel, which is furnished with a pair of running wheels, and the carriage turned round by means of a movable axle, to which a pair of running wheels are keyed, similar to the fore wheels of a coach; or the carriage may be propelled by means of impelling rods, which are attached to the free ends of the piston-rods of the horizontal steam cylinders. These rods, which are supported in an angular position to the ground, are thrust against it at each outward stroke of the piston, and the carriage thereby driven forward. On the return stroke of the piston, the impelling rods are lifted off the ground by being drawn over an inclined plane; and the impelling rods may be worked by eccentricity—the rings of which are connected by links to the upper parts of the rods.

3. Some improvements in propelling boats, or vessels, on shallow waters, are next described. These consist in adapting the "impelling rods" before described, and their motive machinery thereto. The free ends of the impelling rods may, or may not, be furnished with wheels, free to revolve in one direction only, or attached by a swivel joint.

4. The inventor proposes to construct such vessels, as are intended for the conveyance of passengers, with a deep and very narrow hold, and a narrow beam, and a low ordinary ship's sails, made fast at top and bottom to yards, and suspended in the air by balloons; the ends of the lower yards being attached by means of ropes to the bow of the vessel.

Claims.—1. The mode of generating steam by the general construction and arrangement of tubes and vessels containing water with the peculiar application of the fuel.—2. The various modes of propelling, drawing, and guiding carriages.—3. The modes of propelling boats, or vessels, on shallow waters, by means of the impelling rods, or the application of ordinary ship's sails, suspended by balloons to the traction of vessels, and therefore to the transit or conveyance of goods and passengers.

**COAL-FIT EXPLOSIONS.**—The plan proposed by Dr. Dunn, as mentioned in the *Times*, for preventing the occurrence of these dreadful catastrophes, "by placing a hood or cowl, self-acting over the upcast-shaft," of which the worthy doctor claims the invention, but generously "dedicates it to the public," has been used in the collieries of the north of England for at least 20 years.

**CONTRACTS FOR COAL.**—The Commissioners of the Admiralty have given notice that, on Thursday, the 29th inst., they will receive tenders for the supply, at the Royal Marine Barracks, Chatham, Portsmouth, and Plymouth, of the different descriptions of Wall's End coals (Lambton's or Stewart's, &c.), to be delivered between the 1st April, 1849, and 31st March, 1850. The quantity required will be upwards of 2000 tons. The supply of 2000 tons of Newcastle Wall's End Heaton coals contracted for last month, for Greenwich Hospital, will commence also on the 1st April—viz. 2000 tons to be delivered before the 30th day of June, and the remainder 800 in September. All deliveries in one month will be paid for on or about the 16th of the month following. Several large contracts for coals to India, for the use of the East India Company's steamers, are expected to be entered into, of which due notice will be given.

**THE BRITON-FERRY IRON-WORKS, NEAR NEATH.**—These extensive rolling mills, which have been partially suspended for about three months, have now resumed full operations; 200 additional men were engaged last week, and the works have resumed their wonted activity, much to the satisfaction, and greatly to the advantage of the neighbouring population.

**THE COAL TRADE.**—In this district the coal trade is not only depressed, but in a state of almost total stagnation. The principal collieries are working but six or seven days in the fortnight, and the small collieries even less time. The prices of coal at market are ruinously low, and it is very questionable if any coalowner is now working his collieries to a profit. The distress in the district is very great among the labouring classes, and it is heavily felt by tradesmen in the pit villages, as well as by the shopkeepers in the market towns. Great numbers of ships are lying idle in the Tyne and the Wear, and those that obtain freights are subject to long detention, and in many cases are employed at a serious loss to the owner.—*Durham Advertiser*.

**THE COSHEEN MINE.**—We very much regret to find that the shareholders have resolved to wind up the affairs of this company, dispose of the plant and materials, and surrender the mine to the lessors. The working of the mine has not been anything like as productive as formerly, and a good deal of capital has been expended in making new searches, which we understood, were of a promising character.—*Irish Railway Gazette*.

**CHESTER AND HOLYHEAD RAILWAY—THE BRITANNIA BRIDGE.**—At the meeting of the Chester and Holyhead Railway shareholders, yesterday, the report of Mr. Stephenson, the engineer, stated that the line from Chester to Bangor is in a satisfactory state; from the Bangor station to the Britannia-bridge, the unfinished part of contract No. 9, is progressing satisfactorily, and the tunnel is nearly cleared out. The excavation forming the eastern approach to the Britannia-bridge is going on vigorously. At the Britannia-bridge the whole of the masonry is finished, and nearly ready for the reception of the hydraulic presses for lifting the tubes. The Carnarvon platform for the short tubes is finished, and one of them commenced. The corresponding short tube on the Anglesey side is nearly completed. The four large tubes wait only for the cast-iron work to be ready for floating. The arrangements for floating, including the hydraulic presses and pontoons are nearly complete, and will be entirely so in May. The remainder of the line, from here to Holyhead, is in use for traffic. The report detailed the items which caused the excess in the expenditure over the original estimates. The excess in works beyond the Parliamentary estimate was 254,000l.; in stations, 72,000l.; in rails and sleepers, 95,000l.; land, 124,000l.; Conway-bridge, 50,000l.; Britannia-bridge, 350,000l.—making a total excess of 949,000l. on a total amount of 3,654,500l. The rails were calculated to cost 72. per ton; but they had cost on an average 102. 10s. per ton. The surplus land obtained to be purchased was about 400 acres more than the estimate of 950 acres. The amount yet to be expended on these works is stated to be 185,000l. The accounts to the 31st Dec., showed that 3,418,596l. had been received, and 3,358,371l. expended; leaving a balance of 60,379l. in cash and at interest.

**THE RAILWAY CASUALTY COMPENSATION COMPANY.**—Last night, the House went into a committee of the whole House, to consider a resolution which was to be the foundation of a bill to enable the Universal Railway Casualty Compensation Company (imposition of a per centage duty), to effect a composition with the Stamp-office.—Mr. Hume and Mr. Henley thought it requisite that some information should be given to the House, before proceeding further.—Mr. Spooner said, that the object of the measure was to pay a per centage on the amount of insurances effected, in lieu of the stamp duty on each separate insurance, which there would be great difficulty in doing, unless through a measure like the present.—The Speaker (upon being called upon) said, it was absolutely necessary that a committee of the whole House should consider the resolution. He had, therefore, advised the adoption of the present course.—After a short discussion, the resolution was agreed to, and a bill founded upon it was ordered to be brought in.

**MIDLAND RAILWAY.**—An important extension of this company's line, from Leicester through Ashby to Burton-upon-Trent, has just been opened, connecting those parts with Birmingham, Derby, and North Staffordshire. The stations are temporary structures until more substantial ones can be built about the middle of the year. The new extension runs through the track of the valuable coal-fields of Moira, Gresley, Swallin, and Newhall, in South Derbyshire, and those of Leicester, opening up and providing, by a short and cheap route, constant coal and passenger conveyance from those parts to the manufacturing and metropolitan markets.

**CALCINED GRANITE.**—Mr. Archibald McDonald, of Aberdeen, some time ago discovered a process for reducing Aberdeen granite to a fine clay, which was moulded into form at the Seaton Pottery, and presented an article of the most beautiful and durable character. Since then, Mr. McDonald has had an experiment tried of working the calcined granite into water-pipes, and so successful has it proved, that a specimen of 18-inch bore has been forwarded to the Society of Arts in London, by request.—*Witness*.

## JAMES BOYDELL, LAND, MINE, AND MACHINERY VALUER, AND AGENT.

No. 54, THREADNEEDLE-STREET, LONDON.

Has to DISPOSE OF a large quantity of STEEL and MANUFACTURED HARDWARE, now warehoused in London.

Several valuable PATENT RIGHTS, some of which have been profitably worked.

A FREESTONE QUARRY, in North Wales, from which, on account of its quality, the small cost of getting and working it, and its proximity to the sea, London may be supplied at lower prices than those now ruling for much inferior stone, and a large profit left to the proprietor.

An IRONSTONE MINE, likewise in North Wales, worked open cast, close to a shipping port, and now in profitable work.

The LEASE of a very celebrated FOUNDRY and ENGINEERING ESTABLISHMENT, on the River Dee, complete, with fixtures, machinery and tools, in working order, and ready for any parties to embark at once on building first-class iron steam-vessels, and marine and locomotive engines.

The above will be found worthy the attention of any parties desiring to invest money in a profitable business, as they will be disposed of upon terms which will ensure an unusual return to the purchasers of them.

J. BOYDELL has also at his DISPOSAL a RESIDENCE and LANDED PROPERTY in SHROPSHIRE, which is in a good neighbourhood, and which (a large portion of the land adjoining the house being of a most picturesque character, and well timbered, with a streamlet running through it) might be made a country residence for any nobleman or gentleman, such as but few in the kingdom would bear comparison with. Particulars of the above may be had, upon application, at 54, Threadneedle-street.

## JOHN ARROWSMITH, MILLWRIGHT AND STEAM-ENGINE MANUFACTURER.

POT-HOUSE BRIDGE WORKS, BILSTON, NEAR BIRMINGHAM.

MACHINERY of every description, RAILWAY GIRDELS, and CASTINGS of all kinds, IRON ROOFS, &amp;c.

PATTERNS and DRAWINGS for MILLS and FORGE, STEAM-ENGINES, &amp;c., always on hand, and designed for various sizes.

IRON-WORKS ERECTED, of any magnitude, with care and dispatch.

J. A. has now on hand the following STEAM-ENGINES, which he can strongly recommend—viz., FOUR HORIZONTAL STEAM-ENGINES, high-pressure, fixed on ornamental cast-iron frames, just completed, and consisting of—  
6-horse power ..... 25 ditto  
10 ditto ..... 25 ditto  
16 ditto ..... 30 ditto  
20 ditto ..... 30 ditto

Also, a 35-horse HIGH-PRESSURE STEAM-ENGINE (for brick-house), cylinder 20½ diameter, 5-feet 6-inch stroke, complete, with latest improvements. Boilers and gearing to each of the above, if required. For prices and other particulars, apply as above.

## CUNNINGHAM AND CARTER'S NEW SYSTEM OF RAILWAY PROPELSION.

Railway Directors, Engineers, and the public generally, are invited to examine this system, which may be VIEWED on Mondays, Wednesdays, and Saturdays, from half-past Eleven to Three o'clock, at Ingram's Manufactory, 29, CITY-ROAD, near Finsbury-square.

## PORTER'S PATENT CORRUGATED IRON BEAMS, GIRDES, and FIRE-PROOF FLOORS.

These BEAMS and GIRDES are about 30 per cent. lighter, and 20 per cent. cheaper, than any others of wrought-iron.—The FIRE-PROOF FLOORS, although not more costly than those of cast-iron, with brick arches and concrete, give greater security from fire, with less than one-tenth of the weight.—MANUFACTORY—IRON BUILDING &amp; ROOFING WORKS, SOUTH-WARK. OFFICE—2, ADELAIDE-PLACE, LONDON-BRIDGE, CITY.

## RIDER'S RAILWAY BRIDGE.—TO RAILWAY COMPANIES.

This BRIDGE has now been for 18 months in DAILY USE (having a double track) on the HARLEM RAILWAY, in the State of New York, United States.

The Erie Railway and the Newhaven Railway Companies have likewise adopted it. Several other bridges, for ordinary purposes, are also being constructed. The advantages of this over all other iron bridges hitherto invented, consist in the small amount of iron required, compared with the strength obtained, in avoiding the use of any surplus weight of material, in the consequent economy of its construction, and also from its lightness, easy mode of putting together, and facility of transport, in its peculiar adaptation for foreign use.

As regards economy, it can be erected at a cost not exceeding that of a WOODEN BRIDGE, of equal capacity.

Applications to be made to Mr. Moulton, the patentee, Bradford, Wilts; or to Mr. Howard Jacobson, Suffolk-lane, Thames-street, London.

## MONEY.—MESSRS. KILLICK &amp; CO. (late WINSTANLEY, KILLICK, &amp; Co.), SHAREBROKERS, inform their friends and the public, they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms; they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.—6, Bank Chambers, opposite Bank of England.

## THE PYRO-PNEUMATIC STOVE GRATE.

We have had the pleasure of inspecting, during the past week, an apparatus for warming and ventilating rooms, or buildings, which has been patented by Mr. Pierce, of Jermyn-street. The principle, although exceedingly simple, combines, in the most scientific manner, the cheerful appearance of the open fire, so congenial to the English, with a general warmth pervading the whole atmosphere of an apartment, the absence of all injurious and unpleasant drafts and counter currents of cold air, and the emission into the apartment of a stream of gently warmed pure air from the external atmosphere, in lieu of the deteriorated air, which is continually passing up the chimney. The stoves, which are constructed in the most elaborate designs, suitable to apartments in the Grecian, Italian, Gothic, Louis Quatorze, and Renaissance styles of decoration, or plain for school-rooms, hospitals, &c., are externally constructed of cast-iron, with the usual open fire. On the sides within the iron case are upright tubes of anthracite fire-clay; the bottoms open to a shaft, or air-drain, beneath the floor, communicating with the external atmosphere; and the upper orifices lead to a perforated air-chamber at the top of the grate, for the distribution of the fresh air. The flame from the coal ore passes over a bridge, up among the clay tubes, and finally into the chimney; and, however great may be the combustion in the stove, the clay tubes are never heated to a much higher temperature than can be borne by the hand. By these regulations the air is never passed through a medium sufficiently heated to decompose or deteriorate it, but passes through the perforated air-chamber into the apartment, pure, rarefied, and raised to a genial temperature, like a mellow summer's day, from 25° to 30° above the external air. This stove will burn any description of coal, and the consumption of one of moderate size is from 48 lbs. to 56 lbs. during a period of 18 hours, and distributing from 412 to 420 cubic feet of pure warmed atmospheric air per minute. The pyro-pneumatic stove appears to us to hold out great advantages in the ventilation of domestic and public buildings, and will prove invaluable, in a sanitary point of view, in unions, hospitals, &c.

## NEW PATENTS.

A. Shanks, Robert-street, Adelphi, Middlesex, engineer, for an improved mode of giving form to certain metals when in a fluid or molten state.

J. Smith, Hare Craig Dundee, factor to Lord Douglas, of Douglas, for improvements in the manufacture of flour, applicable to the making of bread, biscuits, and pastry.

W. E. H. Moore, of the Temple, barrister-at-law, for improvements in the manufacture of letters and figures to be applied to shop fronts and other surfaces.

G. F. Wilson, gentleman, Belmont, Vauxhall, for improvements in the manufacture of candles and night-lights.

J. W. Brooke, gent., Camden Town, for improvements in lamps.

R. Plummer, Newcastle-upon-Tyne, manufacturer, for certain improvements in machinery, instruments, and processes employed in the preparation and manufacture of flax, and other fibrous substances.

A. Bragg, Queen's-row, Pontonville, bath-keeper, for improvements in propelling by atmospheric pressure.

W. Payne, 163, New Bond-street, Middlesex, watch and pedometer maker, for certain improvements in clocks and watches.

A. Swan, Kirkaldy, Fife, manufacturer, for improvements in heating apparatuses, and in applying hot and warm air to manufacturing and other purposes, where the same are required.

G. Harris, Salford, Lancashire, bleacher and dyer, for certain improvements in the method or process of drying and finishing woven and other fabrics, and in the machinery or apparatus for performing the same, part of which improvements is applicable to stretching woven fabrics.

Ignacio de Barros, gent., Lisbon, Portugal, but now of Paris, for improvements in machinery for making lasts for boots and shoes, butts or stocks for fire-arms, and other irregular forms.

F. H. Thompson, doctor of medicine, Hope-street, Glasgow, for an improvement or improvements in smelting copper or other ores.

F. A. Chaffourier, Regent's-quadrant, merchant, for certain improvements in the manufacture of watches.

P. A. L. Fontanemoreau, South-street, Finsbury, London, for certain improvements in coating or covering metallic and non-metallic bodies. (Being a communication.)

T. Clarke, Hackney, Middlesex, engineer, and T. Motley, Bristol, civil engineer, for certain improvements in obtaining and applying motive power, also improvements in railways and other roads, and in supporting pressure, raising strain, and protecting against fire.

DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

I. Lambert, Manchester, garter safeguard.

E. O. Tindall and L. Tindall, Scarborough, vertical mangle.

W. Richards, Birmingham, percussion cap.

W. Simpson, Belgrave-road, water valve, or hydrant, for supplying water from pipes.

J. E. Smith, Lawrence-lane, Chesham, combination shirt-waistcoat.

D. Burges, Glasgow, water pressure regulator.

W. Powell, Temple-gate, Bristol, fastening stoppers, for jars, bottles, &amp;c.

I. Parks, Birmingham, penholder.

B. Eastope, Birmingham, cork extractor.

C. C. Williams, Glass-house yard, Goswell-street, buffing and drawing apparatus for railways.—*Mechanist's Magazine*.

WHO WANTS A FORTUNE?—CALIFORNIA.—There appears to be no mistake about fortune-making at this favoured spot after all—at least if we are to credit the promoters of a scheme, announced under the title of "the French and American Sacramento Company;" as "by a new process, the machinery for which is now being shipped, it is calculated each share will realise from 10,000l. to 20,000l. in five years.—Each share is to be paid up immediately on delivery of scrip!" Who would remain poor after this golden opportunity?



## Current Prices of Stocks, Shares, &amp; Metals.

STOCK EXCHANGE, Saturday morning eleven o'clock.	
Bank Stock, 7 per Cent., ..	Belgian, 2½ per Cent., 45
3 per Cent. Reduced Ann., 51½	Dutch, 2½ per Cent., 49½
3 per Cent. Consols Ann., 90½	Brazilian, 5 per Cent., 51½
3½ per Cent. Ann., 92½	Chilian, 6 per Cent., 94
Long Annuities, ..	Mexican 5 per Cent., 28½
India Stock, 10½ per Cent., ..	Russian, 5 per Cent., 16½
3 per Cent. Consols for Acc., 90½	Spanish, 5 per Cent., 16½
Exchange Bills, 1000l. 2d. 40 30 pm.	Ditto 8 per Cent., 28½

**MINES.**—A fair proportion of business in mining shares has been transacted during the week, but still there has not been that activity which we have had the pleasure to notice for some weeks past. There are, however, indications of a livelier state of things, and we hope, in our next, to be able to record a recurrence of previous activity.

Devon Great Consols have been done at rather lower rates than last week's quotation. No cause can be assigned for the depression, unless it arises from a temporary absence of buyers, especially as the advanced standard affords a most important addition to the monthly returns, for not less than 15000l. was realised on the last parcel sold, in consequence of that advance.

South Wheal Frances, North Pool, Trelawny, and Mary Ann have been in demand at current prices.

In East and South Tamar, and Heignton Down Consols, ready sales were effected during the week; but in the latter a slight reaction has taken place.

Tincoff and Lewis shares have been in request at last week's quotations; but sellers are rather scarce, in anticipation of advanced prices, arising from the continued improvements that have been made in both mines.

Condurrows were in demand during the early part of the week at advanced quotations; but a change has taken place, and business done at lower rates. This, we hope, is only temporary, as the mine has generally improved.

A few Callingtons have been sought for; perhaps, in consequence of the silver-lead lode in the 112 fm. level having been intersected and found productive.

Inquiries have been made for Hawkmoor; but we do not learn that any business has been effected, in consequence of the scarcity of sellers. The mine is represented to be looking extraordinarily productive.

Shares in the following mines have changed hands since our last:—Devon Great Consols, South Wheal Frances, South Basset, East Wheal Rose, West Caradon, Trevelick and Barrier, Bedford United, Wheal Trehane, Heignton Downs, East Tamar, Herodasoft, South Tamar, Mary Ann, Trelawny, Callington, West Tamar, West Wheal Jewel, South Tamar, Treleigh, Condurrow, Tincoff, Lewis, Stray Park, South Molton, East Crowndale, &c.

At the Wellington Mines meeting, a balance of 372l. was carried to credit of next account. The mine was reported to be highly promising, and that the 22 fm. level, east and west, was productive both in tin and copper.

At the meeting of Great Rough Tor shareholders, the accounts for December and January were passed, showing a balance of 138l. 4s. 11d. against the mine, with liabilities to pay before the next meeting amounting to 800l., principally owing to a large amount of calls being unpaid. Although many of the shares had only the call made at the last meeting due upon them, a resolution was passed unanimously to forfeit the whole. However sharp the practice may be considered by the shareholders who are defaulters, the proceeding appears to be quite in conformity with the rules and regulations of the company. Stringent laws, firm and efficient administration, will certainly place every shareholder on an equal footing; and mining is thereby carried on with respect and legitimacy, which we believe is the principle of this company. A proposal of a proprietor present, to take the whole of the forfeited shares, at the amount of calls due upon them, is left for the consideration of a special general meeting, convened for that purpose, to be held on the 24th inst.

We learn that some rich specimens of quicksilver ore, from 60 to 70 per cent., have been received at Liverpool, the produce of Santa Clara Mine, in Upper California, belonging to Mr. Forbes. This mine was made reference to some few weeks since.

In foreign mines, bargains have been made in United Mexican, St. John del Rey, and Copiapo, which continue in demand. Transactions have also taken place in Australasia, Barossa Range, Bolanos, Guadalupe, &c.

The Altan Mining Association have received their usual monthly report, furnishing the returns for January at 162 tons of copper ore. The mining report advises improvements at Raipais, United Mines, and Old Mine; the other mines continue much the same as last reported.

The Copiapo Mining Company have also received their monthly advices. Letters, dated from Copiapo, Dec. 30th, furnish the mining report for Nov. The copper mines are looking very favourable; but the price afforded by the standard at that period was very discouraging, which the present advance will remove; the returns for Nov., amount to 63½ tons. The silver mines of San Jose del Carmen, and Al Fin Hallada, are represented to be productive; 85 tons have been broken from the lode in Dec.—the company's portion being about 10½ tons; estimated worth about 80 mcs. to the ton. A detailed report will be found in another column.

**HULL, THURSDAY.**—The market has been in a very listless and inanimate state since we wrote last week, and the speculative feeling which showed itself a short time since, has entirely disappeared. The chief feature is a slight disposition to realise on the part of bond holders. Among the stocks most current here, Darwins have improved, and command 7½; North British are weak, and comparatively neglected; the new preference shares mark about 5s. to 6s. pm.; East Anglians rather more inquired for.

## RAILWAY TRAFFIC RETURNS.

Names of Railways.	Length, Rwy.	Present actual cost.	Price per share.	Div. 1848.	Traffic Returns, 1848.
Belfast and Ballymena	37½	—	20½	£483	£569
Birmingham, Lancashire, & Chester	19	997,384	37	9 p.c.	713
Bolton, Blackburn, & West Yorksh.	14	—	7½	—	381
Caledonian	141	3,993,732	23½	—	4496
Chester and Holyhead	84	3,014,692	18½	4	1085
Dublin and Drogheda	35½	774,875	33½	—	687
Dublin and Kingstown	7½	395,515	—	—	596
Dundee, Perth, & Aberdeen Junction	47½	544,554	34½	8	1002
East Anglian (Lynn to Ely)	35	1,167,404	—	—	708
East Lancashire	44	1,733,915	18	5	2004
Eastern Counties and Norfolk	307	10,364,505	10½	4	13313
Eastern Union	51½	1,522,232	13	—	1203
Edinburgh and Glasgow	57½	2,556,889	43½	6	3291
Edinburgh and Northern	78	1,729,213	11½	4	1689
Glasgow, Paisley, and Ayr	102½	2,846,353	54½	4	2551
Glasgow, Paisley, & Greenock	110	848,328	12½	4	1015
Gr. Northern & East Lancashire	110	1,245,496	10½	5	1830
Gr. Southern & Western, Ireland	131	2,844,597	36½	4	1835
Great Western	305½	11,908,815	96½	7	17292
Kendal and Windermere	10½	174,600	25½	—	107
Lancaster and Carlisle	70	1,476,102	54½	4	1865
Lancashire and Yorkshire	172½	8,245,698	72	6	1318
London and North Western	435	25,077,942	135½	7	38211
London and Blackwall	19	1,329,675	54½	4	1213
London, Brighton, & South Coast	162½	6,284,812	35½	6	7110
London and South Western	215	7,450,688	38½	6	6911
London and Southampton	14½	154,643	16	—	129
Manchester, Sheffield, & Lincolnsh.	91	4,651,093	40½	5	3135
Midland Great Western (Irish)	47½	14,042,340	80½	7	20186
Midland Great Western (Irish)	50	725,332	20	4	1061
North British	99	5,163,460	13½	5	2699
Scottish Central	45½	1,245,496	26	—	1863
Shrewsbury and Chester	47	780,373	19½	5	1238
South Devon	55½	1,789,351	17½	—	1413
South-Eastern	165½	7,985,322	23½	6	6782
Taff Vale	36	820,056	—	6	1843
Ulster	136	684,684	48½	—	713
West Cornwall	13	150,879	109	3	227
Whitehaven & Lancaster	269	8,038,255	25	8	11377
York, Newcastle, & Berwick	258½	4,179,309	49½	8	6781
York and North Midland	258½	4,179,309	49½	8	6781

## FOREIGN RAILWAYS.

Amlens and Boulogne	76½	873,338	8½	4	1309
Dieppe	26	—	—	—	469
Dutch Rhénish	57½	—	1	—	716
Monterou and Troyes	71½	—	—	—	645
Northern of France	211	9,000,000	10½	—	4595
Orleans to Bourges (Central)	107½	—	—	—	2048
Orleans to Tours	72	600,000	33½	—	2740
Paris and Orleans	82	3,011,720	34	13½	7584
Paris and Rouen	85	2,082,916	20½	—	5517
Rouen and Havre	59½	—	12½	—	2979
Strasbourg and Bâle (monthly)	88	—	6	—	6497
West Flanders (ditto)	—	—	1½	—	828

## CURRENT PRICE OF GOLD AND SILVER.

Foreign gold, in bars, .. per oz. £3 17 9 New dollars .. per oz. £0 4 10  
Portugal pieces, .. 0 0 0 Silver in bars (standard) .. 0 0 0

## THAMES TUNNEL COMPANY.

The number of passengers who passed through the Tunnel in the week ending March 10, was—No. of passengers, 16,548.—Amount of money, £68 19s. 0d.

**Patel Railway Mining Accident.**—Yesterday, Wm. Mackenzie, a sub-contractor on the Sheffield, Rotherham, and Goole Railway, died of injuries received by a fall down a shaft of the tunnel at Woolley Edge, near Wakefield. The deceased, who had descended the shaft for the first time, was ascending in a skip with a miner, a native of Wales, to park of the midnight meal, when the rope broke, and they were both precipitated to the bottom—a distance of 14 or 16 yards. Their fall was to some extent impeded by a horse-trough, placed across the shaft, else they would have been dashed to pieces. Both the men were very much bruised internally—the ribs of each being broken. Mackenzie was also much injured about the head and face; and this complication of injuries caused his death.

**Cyphers Iron Works.**—J. Thomas, a collier, while employed driving a heading, was killed here by a fall of roof.

## PRICES OF MINING SHARES.

BRITISH MINES.			BRITISH MINES—continued.		
Shares.	Company.	Paid. Price.	Shares.	Company.	Paid. Price.
1000	Aberdeen	8 10	256	South Molton	5 14 6 17½
1024	Aldred Consols	8½	256	South Tamar	14 10 50
1000	Antimony & Silver-lead	5 10	256	South Trelawny	28½ 3 3
1024	Ashburton United Mines	8½ 6 10	3000	South Wales Mining Co.	1 11
1624	Balwellan	9 18	128	South Wheal Basset	20½ 230 40
128	Bainess Consols	28 28	124	South Wh. Frances	160 230 40
1000	Barrow Iron Co.	6 6 4	256	South Wh. Jostiah	24 11
1000	Barrowton	34 11 3	1000	South Wh. Maria	24 11
4000	Bedford	3 24 1	10000	Southern & Western, Irish	3 2 4
1244	Birch Tor Tin Mine	9 3	280	Spearhead Moor	39 40
8000	Blaenavon	50 17½	356	St. Austell Consols	9 10
100	Bolton	182 40	94	St. Ives Consols	70 90
120	Brewer	5 7	128	St. Michael Peakivel	5 10½
10000	British Iron, New, regis.	12 10	995	St. Michael Consols	1 6
1000	British Iron, Old	12 10	1000	Stray Park	18 19
128	Budnick Consols	52½ 35	9600	Tamar Consols	3 6 4
1000	Callington	20 11 10	1024	Tary Consols	6 11
1000	Cambores Consols	5 3	6000	Tincoff	7 10 10 10
20000	Cambores' Steam Coal	6 1	1000	Tin Vale	24 24
256	Caradon Copper Mine	94 24	54	Toburn	170 10
256	Caradon Mines	22½ 10	256	Tregorval	3 8
256	Caradon United	24 10	256	Trevelick	12 26 28
356	Caradon Wh. Hooper	21 40	5000	Trevelick Consols	3 2 24
1000	Carn Brea	15 35 100	2000	Trevelick	3 10
3000	Carton Consols	14 10	96	Trevelick	10 150
114	Castlethorn	230 10	120	Trevelick	5 15 16
512	Castlethorn Hill	4 1	120	Trevelick and Barrier	180 85 90 5
500	Cleaveland	54 4	288	Trevelick	11 10
128	Condurrow	45 60 60	100	United Mines	300 200
256	Condurrow	50 70 15	256	United Mines	25 30 35
2560	Cook's Kitchen	14 2 21	128	West Buller	10 165
1000	Coombe Valley Quarry	34 44	256	West Caradon	30 115 20
1000	Copper Bottom	14 62	512	West Fowey Consols	40 12
212	Craddock Moor	23½ 5	256	West Providence	9 15
128	Creeg Brawa	120 30	200	West Seton	40 220
500	Cubert Mine	124 10	—	West of Scotland Iron Co.	240 100
1000	Cwm Eridin	3 3 4	120	West Trevelick	5 25
256	D. Frior & Blackfist	84 5	256	West United Hills	10 44
7100	Derwent	84 5	512	West Wheal Frances	13 2
45	Devon & Courtney Con.	72 10	256	West Wh. Friendship	9 8
1024	Devon Great Consols	1 215 20	2725	West Wheal Jewel	11 10 11½
1000	Durham	2 5	256	West Wheal Tolgus	80 92 10
186	Dolcoath	30 15	256	West Wheal Treasury	19 5
2560	Drake Walls	54 4 5	1024	Whiddon Mines	42 2
3000	Durham County Coal	45 3	5200	Wickford Copper	5 8 8½
3000	Dyringwem	12 12 12	107	Wheal Adams	79 8
1024	East Wheal Fortune	2 2	1000	Wheal Agar	21 5
128	East Wheal Rose	50 1600 50	256	Wheal Albert	10 11
—	East of Scotland Iron Co.	5 11	256	Wheal Anderson	23 15
128	East Wheal Soton	14 10	128	Wheal Anna	50½
1280	Esgar Lh.	13 24 3	512	Wheal Anna Maria	64 8
256	Exmoor Wh. Eliza	6 6	1024	Wheal Ash	41 8
494	Fowey Consols	40 45	120	Wheal Bal	52 30
128	Fredd Lwydd Mines	12 2	256	Wheal Basset	14 2
6400	Geardir	2 2	256	Wheal Blencowe	21 5
4000	Gen. Mining Co. for Ire.	14 11	256	Wheal Buckets	20 8
256	Gonauens	44½ 16	256	Wheal Calstock	5 12
128	Gonvrea	4 2	1024	Wheal Coal	1 4
100	Great Consols	1000 190 200	256	Wheal Courteen	12½ 15
512	Gr. Wh. Rough Tor Con.	18½ 11	256	Wheal Fortescue	64 10
2000	Growtha Steel Company	5 1	368	Wheal Franco	27 18
256	Gwynne Consols	40 10	100	Wheal Harriet	45 20
6000	Heignton Down Cons.	14 2½	100	Wheal Henry	20 15
256	Heigntonfoot	27 19	112	Wheal Margaret	79 200
10000	Hibernian	124 11	512	Wheal Mary Ann	5 15 6
239	Hobbs' Hill	6 11	208	Wheal Mary Consols	60½ 8
1000	Holmbush	22 4 6	—	Wheal Penhale	12
1024	Kingslet and Bedford	4 7½	210	Wheal Prospect	4 7
827	Kirkcubrightshire	54 2	120	Wheal Reeth	41 150
2018	Lambrore Wh. Maria	18 2	128	Wheal Ros	60 60
252	Lansarth Consols	12 4	256	Wheal Soton	214 350 600
128	Lantant Consols	90 60	180	Wheal Sisters	35½ 5
160	Levant	175 180	494	Wheal Sophia	44 5
1000	Lewis	16 104	128	Wheal Spearhead	10 75
1000	Livnyr Mines	72 7	128	Wheal St. Ann	30 35
2800	Livnyr Iron	50 10	550	Wheal Trevelick	7 20
3600	Livnyr Consols	10 10	260	Wheal Trelawny	71 65 70
6000	Marke Valley	10 10	256	Wh. Tremayne (St. Ervan)	94 24
3000	Marke Hills	10 10	1024	Wheal Tremayne	94 3
128	Methu	34 140	92	Wheal Tryphena	140 265
20000	Mining Co. of Ireland	7 4	1000	Wheal Vincent	2 7
256	New East Crowndale	34 24	256	Wheal Vow (Perranz)	8 10
100	North Pool	45 600	184	Wheal Vyvyan	— 60
140	North Roskear	45 105	250	Wheal Williams	28½ 8
262	North Wh. Lelau	14 3	1024	William & Mary Worth	2 24
18000	Northern Coal Co.	23 2			
1000	North Western	80 800			
8000	Pennant & Craigwen	2 2			
1024	Penzance Consols	16 34½			
512	Plymouth Wh. Yeoland	64 10			
200	Polsath Consols	54 44			
2500	Rhoswiddall & Bachelton	10 10			
10000	Rhymney Iron	50 13			
10000	Ditto New	7 6½			
2000	Roskear Consols	1 1			
256	Roskear Mines	12 10			
2000	Runnaford Coombe Tin	2 2 11			
9048	South Tamar	2 11½			
128	South Caradon	5 400			
1100	South Dolcoath	4 5			
356	St. Friandsh. Wh. Ann	20 10			

\* We should feel greatly obliged by agents, or others interested, furnishing us with such corrections for our Share List as we may not have received through our usual channels of information—



## NOTICES TO CORRESPONDENTS.

We must impress upon our correspondents the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

**HEIN-PAUSSEN STRAUS VENTILATOR.**—Z. W. had better apply to Mr. Mather, South Shields. We do not think the Report of the South Shields Committee can be obtained in London.

**An Intending Shareholder** (City).—Should apply to some respectable sharebroker, who will readily furnish the information respecting the undertaking. We know nothing beyond what appears in the mine captain's reports, and invariably decline furnishing "opinions," or "advice."

**A Brassfounder** (Birmingham).—Bells were first introduced about A.D. 460, at Nola, in Campania—hence the term "Campanology" has been applied to the art of bell-making. The largest bell that was ever founded is that of Moscow. It has never been suspended, but lays in a deep pit at the Kremlin. The circumference is 67 feet 3½ inches, the height 21 feet 4½ inches, and the thickness, at the thickest part, 23 inches; its weight has been computed at 443,772 lbs., which, at the rate of 2s. 6d. per lb., will amount to the sum of 60,471l. 10s. lying unemployed, and of use to no one. It was cast at the expense of the Empress Anne, in the year 1735. In England, the largest bells are those at Christ Church College, Oxford, which weighs 17,000 lbs.; St. Paul's, London, 11,474 lbs., and the "Great Tom," of Lincoln, 10,994 lbs.

**A Mechanic** (Spitalfields).—The numbers of patents for inventions related to West-minster, during the year 1848, were 429, and the amount of the duty to 9367l.; during the same period in Scotland, 168, fees 2938s.; and in Ireland, 76, fees 538s.

**L. M.** (City).—154 London children are equal to 8 Newcastle.

**United Mexican Shareholder** (Reading).—In answer to our correspondent, who inquires what power the directors have to enter into new mining adventures without the sanction of shareholders obtained at a public meeting, to the great risk and depreciation of their property? we can only say that we have no doubt they have such power under the Deed of Settlement, or they certainly would not incur the responsibility of new mining undertakings. We think there can be no question as to the sound policy of thus extending their workings, when a vein of very high promise is offered on most advantageous terms. The company's finances may be considered now in a healthy state; probably, regular dividends may also be expected, and with such in Mexico of a quarter of a million sterling, we think the directors perfectly justified in thus attempting the profitable employment of their surplus capital. The experience and caution of Mr. Shoolbred are well-known, and his choice of the Aldana mine already promises to be as advantageous as he expected, the produce containing a large portion of gold than is usually found in such ores, and the adjoining silver mine, recently taken, is also highly spoken of by all who know the district, and the speculation is considered highly valuable. We think the directors deserve the confidence of our correspondent, and all the shareholders.

**Tyre** (Dulston).—The electric light may be shown by a small battery; a piece of charcoal or coke is attached to the ends of the wires in connection with the positive and negative poles, and when brought into contact, and thus completing the galvanic circuit, the carbon points immediately become incandescent, giving out a brilliant and dazzling light. Although not in actual combustion, the charcoal or coke is constantly undergoing gradual abrasion at one pole, while an accumulation is taking place at the other; and as the distance between the two lengths, the light becomes less and less brilliant, and at length disappears. It is the difficulty of obtaining the carbon of a perfectly clear, solid, and homogeneous nature, and of devising some simple and self-acting plan by which, as the distance is increased, they should be pressed forward to their proper position, and thus keep up the brilliancy and regularity of the light, which has hitherto baffled the patentees in their endeavours to render this beautiful light available for public illumination or domestic purposes. Perhaps the greatest of all the difficulties lies in the fact, that one light only can be obtained from one galvanic circuit.

**TREASURY MINE.**—"Argus" (Truro), in referring to our remarks, in the Journal of March 3, on this subject, states, that in Cornwall the whole proceedings of the parties connected with the mine are considered a job; that no one ever before heard of a purser getting 4000l. a year in an infant mine, expending from 900l. to 1200l. per month, and it could only be London adventures who could submit to it. In the country, they are informed that he is also allowed a horse and gig, house, and candles; and that his travelling charges are excessive. It is believed that the annual expenditure is now increased to 4000l. a year, while the ore produced is but from 1500l. to 1900l. The writer says the purser is not a Cornish man; and he refers to the subject, lest any one should imagine the mining interest in Cornwall could be guilty of such conduct towards any class of the community, however ignorant they might be of mining matters.

**A Mining Captain** (Helston).—We do not think that Vancouver's Island will be a good field for your exertions for many years to come. While so many other countries are open, the plan of colonization published by the Hudson's Bay Company, appears to give but little encouragement to the emigrant, according to their scheme, all "Norwals" are to belong to the company, who are to have the right of mining, making compensation to the owner of the soil, exceptional mines, which he may work, paying a royalty of 2s. 6d. per ton.

**Smelter** (Cromford).—The highest price, we believe, that lead has ever attained in the present century, was in the year 1816, when it stood at 35l. 12s. 6d.

**G. M.** (Penzance).—The use of the diving rod is of considerable antiquity, both in Spain and Germany. It was first introduced into England in the reign of Queen Anne, by a renegade Spaniard, of the name of Ribiera.

**An Engineer** (Sunderland).—There are at present but few openings for your profession in Russia, nearly all the engineering establishments are under the control of the government; your best plan would be to apply for further information to the Russian Consul General. There are large deposits of coal at Donetz, in Southern Russia, in the district of the Don Cossacks; the coal measures rest on beds of grauwacke, into which they pass.

**A Merchant**.—"We have seen the prospectus of the company to which you allude, and have already stated our opinion. If the prospects are so brilliant as reported, and so much valuable ore is already raised, we apprehend there would be no difficulty in the present proprietors raising sufficient money to develop their property, without having recourse to the formation of a company to assist them in carrying out their plans.

**H. Jameson** (King's College).—The first person known to use the blow-pipe was Andreas Swab, a Swedish metallurgist, and counsellor of mines. This was about the year 1733.

**G. M.** (Liverpool).—Jams are 10 inches square; they are used beside the doors of the furnace. The best are manufactured at Stourbridge. You will find Dynas bricks most useful for your roofs; Stourbridge for your bridge and grate; the common Newcastle bricks are sufficiently good enough to line the stack, and we should advise the sides to be entirely formed of Stourbridge clay. If you have never tried the "Norwals" bricks in your chimneys, we would advise you to give them a trial. Care must be taken in laying them to place them on their edges, and all cavities must be well filled up with their own loam; when dry, they must be rubbed, so as to present an even surface, as any regular getting between the apertures, in the course of a few weeks, will force them up, and render the bottom very difficult and disagreeable to work upon.

**A Subscriber** (Alston).—The Peak of Teneriffe is 12,216 feet above the surface of the Atlantic. A more particular account of this volcano, and the geological formation of the Canary Islands, was published in our Journal last year.

**Californian** (Bristol).—Gold has been found in England; in the reigns of Edward the 1st and 2d there were considerable works at Combarthin, in Devonshire; between 300 and 400 miners were sent from Derbyshire, and employed to work them. Their produce was so considerable, as to assist the Black Prince in his wars with France.

**RUSSAFORD COBBLE MINE.**—"R. C. M." (Woolwich).—The quotation in our last Journal was furnished us by a party in whom we have confidence, and we believe to be correct. We cannot recommend any particular broker—the addresses of several will be found in our advertising columns.

**H. N.** (Upper Brook-street).—In Germany, the fuel mostly used in the reduction of lead is charcoal. At present, we are not enabled to give you the detailed information you require, but will find every particular regarding lead smelting by charcoal, the making of litharge, &c., in "Veholes Hüttenkunde," published in Vienna, by Carl Gerald. Bohn, or any of the foreign booksellers, could easily procure it for you.

**Issue Whitehouse** (Rutland).—To be enabled to analyze the several sorts of ironstone, and to discover their per centage, and the different kinds of earthy matters they contain, as well as the other chemical information you seek, would require you to be possessed of a small but good laboratory; previous to experimenting yourself, it would be necessary that you should take lessons in the manipulation, so as to be enabled to perform your experiments with some degree of accuracy; at the same time, it would be quite requisite that you should have a tolerable knowledge of the principles of chemistry. There are a number of works published on this subject, which lay down general rules for the student, but to arrive at a correct result, practice is necessary. We can provide you with the analysis of the ores from several localities, and inform you how the process is managed, but we much doubt if this would be of any assistance to you.

**J. P.** (Birkenhead).—A great quantity of the Chili ores are sulphurets; the South American, and those from Cuba, can be as easily smelted as the Australian ores, they are much more fusible, and require less care than our Cornish ores.

**E. K. W.** (Manchester).—We have instituted some inquiries regarding the mining association you refer to; we have not been able to discover who are the directors, even if there be any. There are several companies started here for the same purpose, but no person of note has, hitherto, allowed his name to appear as a director. As to the Californian mania, will produce its bubble companies, and we are afraid that, in many instances, the shareholders will hear no more of the speculation after they have paid the deposit. Many adventurers take office and start companies solely to obtain this, and we would advise you, previous to your embarking in this most hazardous of speculations, to ascertain thoroughly who the parties are, and who are at the head of the project.

**Germanicus** (Paddington).—The only place to obtain foreign copper ores, we think, at Swansea; at the sale of the 22nd inst., probably, the Australian companies might dispose of some of theirs in London. A correspondent informs us that he has applied to several of the copper companies here, to dispose of some of their foreign copper ores, but they have refused, stating they are buyers, not sellers.

**G. M. S.** (Hampstead).—Electrum is found in Siberia; its component parts are, in 100 parts 64, silver 36. There is a mineral found in the mines of Kongsberg, in Norway containing, in 100 parts, gold 28, and silver 72; this is styled varicose native silver. Native iridium only occurs, accompanying platinum, at Nische Taylak, in Siberia.

**Speed** (Canterbury).—The Queen's speech was, last year, on the opening of Parliament, transmitted, by rail, from London to Glasgow, a distance of 472½ miles, in 10 hours and 22 minutes.

**Agriculture** (North Mimms).—The entire population of the United States is probably 50,000,000. America is calculated to contain equal to half the useful soil of Europe, or 10,000,000 square miles, each square mile capable of sustaining 350 persons, or a population of 3,500,000,000—four times the present population of the earth.

**B. E.** (Newcastle).—The coals of England exceed in annual value the gold and silver of South America as 430 to 231, or more than double.

**Meteor** (Bethnal Green).—The records of meteoric stones, in all ages and countries, and of all sizes and shapes, are at least 200 in number, and many recent instances are well authenticated. The most intelligible theory is, that they are metallic vapours floating in space, or in the more attenuated part of the atmosphere, which, becoming condensed by electric agency, immediately fall to the earth. They are generally composed of iron, silica, magnesia, and generally contain nickel and sulphur.

We should feel obliged to all pursers, captains, or adventurers, to forward particulars of meetings, &c., of the mines with which they may be connected, on the earliest opportunity, that they may be published in the Journal.

The numerous disappointments in procuring back Numbers during the past year induces us to suggest, that subscribers should be careful in giving, or otherwise preserving, their papers; and where extra copies are required, that they should be applied for as early as possible.

It is particularly requested that all communications may be addressed—

To the Editor,

Mining Journal Office,

26, FLEET-STREET, LONDON.

And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

## THE MINING JOURNAL

Railway and Commercial Gazette.

LONDON, MARCH 10, 1849.

The MINING JOURNAL is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

The year 1848, remarkable alike for the most stirring events on the continent of Europe which have taken place for centuries—the downfall of thrones—the remodelling the organisations of society—and a consequent depression in the mining, manufacturing, and commercial interests of Britain perhaps unprecedented—and the present year having undoubtedly set in with much brighter auspices, and under circumstances which hold out hopes of great future improvement, it will be interesting to take a review of the past state of those branches of trade more immediately connected with the mining interest, in comparison with the first week of 1849 and the present time. At the commencement of the year 1848 bar-iron in London was 8l. 5s. per ton, and rails 7l. 10s. After the first revolution in France, in February, the price gradually gave way in bar to 6l. 15s., and rails to 6l.; and in the course of the year went down to 6l. and 5l. 5s. respectively. In January, 1848, the copper was 97l. per ton; but up to the breaking out of the second disturbance in June, gave way 10l. per ton, and in July was reduced to 78l. 10s. per ton, being a reduction of nearly 20l. per ton. Block tin which, in January, 1848, was quoted 82s. per cwt. went down to 75s.; tin plates only falling in price about 1s. and 1s. 6d. per box. These great drawbacks upon the returns of the metal merchant, and consequently, on the miner and manufacturer, were evidently the result of the commotions among the continental states, by which the silken bonds of society were rudely torn asunder, the operations of all handicraft suspended, and the markets consequently closed against the raw material. So completely was this the case, that a large and valuable cargo of copper consigned to Paris was obliged to be re-imported into England—a circumstance altogether unprecedented. The money market, too, as the barometer of every commercial change or crisis, began to show indications of paralysis; and the year "dragged its slow length along," amid universal complainings, loss of property, insolvency, and ruin. Many of the sad reverses to which numerous individuals and families were subjected, doubtless arose from previous ill-considered and even wild speculations in railway shares, and when the calls came, notwithstanding Acts of Parliament were obtained to postpone the completion of nearly all the railway works, and thus make the payments as easy as possible, holders were not prepared, forced their shares on the market, and hence the alarming depression in the value of railway shares throughout the greater part of the year. It is matter for serious congratulation, that a marked improvement has taken place in every branch of the metal trade, and although prices have not reached the figures quoted in January, 1848, and from which they so gradually and alarmingly declined, there has, since the commencement of the present year, been a steady advance, as the following table will show—

Bar-iron, in London, in January last	per ton £6 0 0, is now £7 0 0
Rails	5 5 0 " 6 5 0
Chairs	4 0 0 " 4 10 0
The copper	78 10 0 " 87 10 0
Ordinary sheets & bolts	9d " 12 0
Block tin	per cwt 82 0 0 " 75 0 0
Bars	per cwt 4 0 0 " 4 13 0
Plates, charcoal &c.	per box 1 9 0 " 1 19 6
" IX	per box 1 16 6 " 1 19 6

In lead there has been no material increase in price; it, however, remains firm, and the demand is good, both for home consumption and export. An improvement in the standard of copper ore has taken place within the past fortnight; the iron trade in all the districts is in great activity; the industrial tranquillity which everywhere reigns forebodes prosperity and increase; and it is the general hope and belief that, as the summer advances, continental confidence restored, and the foreign markets again craving supplies, the year 1849 will, in some measure, make up for the depression, loss, and disappointment of 1848.

It is pleasing to find that the attention of the Legislature is at last directed to accidents in mines and collieries, and that there are some grounds to hope the subject will receive that attention to which it has so just a claim. The late melancholy event at Darley Main Colliery, followed, as it has been, by two other explosions of fire-damp, by which 19 souls, in addition to the 75, have been hurried into eternity, has at last touched the sympathies of the Minister and the Legislature, and the extent of the fatal accident is alone the ground on which the question is agitated, or that any measure is likely to be adopted to prevent, so far as human means will, a recurrence of these melancholy scenes.

Our columns convey but a faint idea of the sacrifice of life, or the number of accidents which occurred for the last two or three years; we have only recorded the loss of life of some 1500 to 1800, and injuries 800 to 1000; but we would ask, what proportion do these figures bear to the actual sacrifice of life? Our authorities, in most instances, are the local papers, which give the result of a coroner's inquest, when such takes place; but how few, comparatively, are thus reported, it being the object of the mine proprietor, or coal-owner, as well as the colliery bailiff, or agent, to keep from the public accidents of this nature, so that it is only when some fearful accident arises, and that lives counted by tens and hundreds are lost, that the attention of the public is directed to the momentous question of life and death. We have looked through our file for the present year, and we find that, for the ten weeks ending March 10, the loss of life was 138, or after the rate of 720 per annum, and the injuries sustained, many of which were followed by dissolution, 57, or nearly 300 per annum—the deaths being an increase on those of the preceding year of 28 per cent.

It is full time something should be done; and should a committee be appointed to take evidence, we trust the evidence will be not alone confined to practical viewers in the several districts, who may be naturally expected to be, in some degree, biased; and, with the jealousy we know to exist on the part of coalowners as to interference, and the power they hold over their agents, it will be found a somewhat difficult task to arrive at that information and knowledge, which is so necessary to render any Act perfect in itself which may attain the desired end. We feel that the subject is one which is of a delicate nature, as permitting legislative interference with private enterprise; but we have a precedent in the bill introduced by Lord ASHLEY, and which passed into a law. The Ten Hours' Bill is another infringement on private enterprise, but the grounds on which these measures are introduced partake of a national character; they are philanthropic in their nature; it is the Legislature protecting those who have not the means of protecting themselves. Let, then, the Government come forward with a humane and manly spirit—let them bring the subject under the consideration of the House—or let some Member connected with the coal districts take up the question, and show that he possesses one spark of humanity. He can readily acquire data on which to found his case, and if he be a colliery proprietor, the halo round his brow will be brighter for having been the means of holding out succour and protection to the working collier, who, by the "sweat of his brow," toils for the

riches which enables the hon. Member to take his seat, and record his vote on all matters of national interest. Is there no noble lord in the Upper House who will boldly throw down the gauntlet, and challenge others to join him in instituting an inquiry, in appointing a committee, in acting on its resolve, and, if it should be so recommended, giving his zealous aid and support to the passing of a measure which would be a check on the present careless system? Let there be certain laws laid down, whereby not only shall the mine and colliery-owner give a monthly return of the state of the colliery, machinery, &c., but that inspectors be appointed to examine the machinery, and inspect the headways, air-courses, &c., who should be required to make their reports periodically. No power should be vested in them, beyond examining, and rendering to a board, to be appointed, the result of their investigations. In all cases where death should arise from explosion of fire-damp, fall of roof, breakage of rope, &c., it should be visited by a heavy fine, or deodand, unless it can be clearly demonstrated, to the satisfaction of a jury, that every care had been taken to prevent such accident, and that no laches had been committed by the mine or coalowner.

Many difficulties lie in the way of Legislative interference, we are well aware; but any approach, however slight, must be hailed with gladness by every lover of his fellow-being. It is our duty to protect and watch over the lives of the miner and collier, as it has ever been considered to be that of the seaman; and we trust the day is now near at hand when we may congratulate the hard-working collier that his life is considered worthy a thought on the part of the British Legislature.

In our last Number we inserted a communication on "Railways and Mines" from a correspondent, signed "Placer," to which we called the attention of our readers in a brief leading article, and we consider the subject of sufficient importance to devote space for a few further remarks. Notwithstanding the uncertainty with which mining undertakings are surrounded, the chances against a mine turning out productive, or even a productive mine continuing so for any length of time; and the variety of casualties which may happen—such as falling in of roof, being deluged with water, derangement and breakage of machinery, by which the working of the mines to a profit is rendered impossible—yet the capitalist, with experience and judgment to guide him, who makes mining his object, not only escapes loss, but generally realises more profit than by any other species of investment. By holding in established and dividend-paying mines, returning from 12 to 20 per cent., speculating cautiously in such mines as our correspondent has described in Nos. 3 and 4, and carefully watching the capabilities of those in No. 2, he knows the profits of one fortunate hit will pay for his share in a dozen failures; while his capital invested in the better class of mines may be expected to be repaid in three or four years.

Railways, it is clear, can never, under the present system of working and management, pay anything like the amount of dividend which was expected from them; indeed, it almost appears inevitable, that the dividends, in most companies, must yet further decrease, and, consequently cause a still greater depreciation in the value of share property. Commenced under the furor of an excited mania, constructed with the most unbounded extravagance, and many lines laid out which were not adapted for this costly means of transit at all, the railway system, instead of being a general benefit to the public, and a profitable speculation to the subscriber, turned out a giant monopoly, in which an invasion of many of the most cherished rights of the public was attempted, but in which the airy-built castles of the sanguine promoters toppled to their fall. The last dividend paid by the Great Western Company was 7l. per 100l. share—that on the London and North-Western also 7l. per 100l. stock; a share in the former can be purchased for 98, or 2 discount; while in the latter 100l. stock is quoted at 137, or at a premium of 37, showing a difference of confidence on the part of investors of nearly 40 per cent. against the Great Western dividend continuing to be 7 per cent.; while original holders of shares fully calculated on from 10 to 12 per cent in perpetuity, and many were purchased on the faith of such expectation at 240l., when only 80l. per share had been paid upon them. It is these startling facts which induce us to call the attention of our readers to these two modes of securing a return for capital. Railways are retrograding, becoming less profitable than ever, mining property is improving, and when returns are making, or when the indications hold out promise of success, shares obtain a comparatively good price in the market.

### SUPPLY OF PURE WATER TO LARGE TOWNS.

The importance of an unlimited supply of pure water to the populations of large cities and towns is so generally admitted, and its necessity, on the question of the health of the community, so apparent, that it would be waste of words to dilate on the matter. Yet, notwithstanding this wide-spread knowledge, and the sanitary movement which has for years been progressing, we find scarcely a town in England supplied with this necessary element by companies, but where complaints are made of its impurity.

With respect to that of Hull, we cannot do better than give some observations of Dr. Murray, in his usual clear and forcible style, addressed by him to the editor of the Hull Packet. He says—"The supply of wholesome water to a large and populous town like Hull is a question of the greatest moment and deepest interest. Health and disease, life and death, humanly speaking, hang trembling in the scale of decision; and it is, therefore, no light thing which induces me now to trouble you. Two years ago, a letter of mine, on this all-important subject, was, to my unmixt surprise, refused insertion in one of your contemporaries. I frankly confess that I am astonished at some of the opinions adduced in evidence on the present Sanitary Inquisition in Hull. The water which now supplies the town, I fearlessly maintain—and I speak advisedly—is among the very worst in the United Kingdom, arising especially from two sources—namely: the too frequent infusion of saline matter, derived from tidal influence, and the infiltration of organic matter arising from the drains, sewers, &c., which empty themselves into the River Hull. It is a mistake to say that the chemist cannot detect organic matter in water; the nitrate of silver will do so, from the brown colour which supervenes, as well as act as the reagent for muriates. By this test I have detected organic matter in the waters of the Ganges and the Nile, as well as the River Thames. River water should more especially be regarded with a jealous eye. At Inverness, the waters of the Ness attack not merely strangers, but violently affect even horses and cattle; and, during the recent prevalence of cholera at Dumfries, Dr. Sutherland very wisely forbade the inhabitants the use of the water of the Nith, and so 'the plague was stayed.' Let it never be forgotten, that the mere filter cannot, by any means, change either the chemical constitution of water, or intercept the transit of the germs of animalcular life. During the hot summer, more than two years ago, the water was fetid and corrupt, after it had passed our house filter, from the presence of putrescent and feculent matter, and in that brought to table I distinctly saw, with the naked eye, vibriones and other poly-gastric infusoria; and when the water was allowed to remain for a short time in a glass vessel, in the sunshine, it became insipid with life, in myriads—not merely monads and the atomus term, easily detected by the Stanhope and Codrington lens, but beings of still more complicated organisms. When salt and fresh waters commingle, by this interfusion both marine and fresh water animalcules perish—hence the source of putrid matter.—J. MURRAY, FR. D."

**NARROW ESCAPE FROM SUFFOCATION.**—A vessel from Wales, laden with Welsh coals, a few days since arrived in the river, and was moored off Topping's Wharf, where she remains. The evening being very cold, the crew, consisting of five men, made up a large fire in the fore-cabin, and before going to bed put down the fore-cabin hatch. The watchman, in the morning, was surprised that no one appeared on deck; he called, but received no answer, and, on going below, found the five men in their berths apparently lifeless, and blood issuing from their mouths and noses. He immediately had them conveyed on deck, and two medical men were speedily in attendance, who immediately saw they were labouring under the effects of some deleterious vapour; they proceeded accordingly, and after a lapse of 12 hours were pronounced out of danger. On examining the Welsh coal it was found to contain much sulphur, which, on combustion, had filled the cabin with sulphurous acid gas and caused the accident.

**LAND REVENUES.**—A return moved for by the Earl of Lincoln, M.P., shows that the total amount of the money raised, and at present chargeable on the security of the land revenues of the Crown, is 805,000l., borrowed from the Equitable Assurance Society, the Bank of England, Lady Eliot's trustees, Messrs. Coutts and Co., and Mr. G. W. Aymer. The amount of interest hitherto paid is 160,251l.



## TREATIES OF COMMERCE AND PATENT LAWS.

There are no two subjects, perhaps, of greater importance to us, as a mercantile people, than our treaties of commerce and our patent laws, for it has been justly observed by a talented foreign jurist, that "in modern times the most important commercial rights of nations are founded upon treaties;" and it will be readily admitted that England has contributed her quota in obtaining, and generally establishing, these important rights. Trace our historic and diplomatic records from the earliest periods, and it will be found that there is scarcely a civilised state with which Great Britain has not, at one period or another, entered into an international alliance; and an examination of our treaties clearly shows that these numerous international compacts have been chiefly concluded in order to secure reciprocal advantages. As regards our patent laws, we have long entertained a desire to see them put upon a more clear, liberal, and equitable basis than they now are, owing to the altered state of the times, in all respects compared with those in which they were first promulgated. When we consider the vast number of patents annually taken out, that these grants extend, in the first instance, over a period of fourteen years, and that, in the present day, they are frequently further extended for an additional period of seven years; that they are often granted simultaneously to different individuals for the slightest variation in the same species of machine, or article of manufacture; that many of them are already manufactured abroad, and become legitimate articles of importation; we cannot avoid viewing these grants, in many instances, as monopolies, as being contrary to the spirit of the common and statute law of this country. That celebrated lawyer, Sir Edward Coke, says, in his *Third Institute*—"It appeareth, by judgment in Parliament, that all grants of monopolies are against the ancient and fundamental laws of the kingdom." The same high authority, commenting upon the Act relative to letters patent, remarks, that "this statute (21st Jac. I., cap. 3) was especially passed for the suppression of all monopolies." And we also find it declared by the 6th section of this Act, that "letters patent shall not be granted to any but the true and first inventor of a new manufacture; that the grant shall not be made contrary to law, contrary to general convenience, or hurtful to trade." These remarks have been called forth on account of the very great importance of the subject itself, with which the interests of the public are most deeply connected, and also from an attempt recently and publicly made to establish in this country (under the guise of a patent) a monopoly, not only in the sole manufacture and sale of an article originally of foreign introduction, but also in prohibiting the importation from America of articles of the manufacture in question, unless the importers pay to the English patentee a specific tax on each article imported. The facts of this affair are very simple, but the results to trade may, in a commercial point of view, prove most important.

Some years since specimens of improved India-rubber were introduced into England, from America, by the agent of an American manufacturer; these specimens were, in the usual way, submitted to the trade, and more particularly samples were, by request, left with a firm in the north of England; the samples remained in their possession for a considerable time, when it was subsequently discovered that one of the firm alluded to had taken out a patent for manufacturing, in England, the material of which they were composed. This person has ever since carried on, with his partners, the manufacture in question, holding himself out to the public as the true and first inventor thereof. Large quantities, however, of this India-rubber manufacture continue to be exported from America, and sold in England; but the English patentee, pluming himself on the "force and virtue," as the lawyers say, of his alleged discovery, promulgated advertisements cautioning all traders from importing, purchasing, or selling articles of the American manufacture, unless they paid to him such tax as he should be pleased to impose on each article imported! And not only did he threaten to bring actions against any parties violating the prohibition, but has actually commenced proceedings against several (it is said, 50) persons engaged in the trade, some of which actions will shortly be tried in our law courts. Serious as this procedure must be to English merchants, it is of far greater importance to the interests of American manufacturers and exporters, one of whom, being desirous of ascertaining whether or not commercial operations between America and England can legally be so annihilated, caused a case to be submitted to Mr. Charles Egan, the Chancery barrister, a copy of whose opinion has been forwarded to us, and which is as follows:—

"I am of opinion that the convention of commerce between Great Britain and the United States, dated July 3, 1815 (and subsequently extended, continued, and ratified by the British Legislature), authorises the importation into England of 'any articles, the growth, produce, or manufacture of the United States'—that such goods are subject only to the duties specified by the Legislature, and that no letters patent, granted subsequently to the said treaty of commerce, can nullify the conditions thereof. (Signed) 'CHARLES EGAN.'"

The American importers have also, we are informed, submitted the case to the American Minister, Mr. Bancroft, who will, of course, bring it under the notice of our Secretary of State for Foreign Affairs, and, no doubt, proper measures will be taken to demonstrate that the fiscal regulations of the state cannot be violated with impunity—that the sovereign's grant cannot (as in the days of Elizabeth, James, and Charles I.) be used as an instrument for oppressing either her most gracious Majesty's subjects, or the subjects of any state in international alliance with Great Britain, and that our commercial treaties, upon which our prosperity so materially depends, shall (in accordance with their express stipulations) be upheld "in such a manner, as to render the same reciprocally beneficial and satisfactory."

**ELECTRIC TELEGRAPH TO AMERICA.**—The projectors of this work in the United States propose to construct it between the coast of Newfoundland and the nearest cape of Ireland. They state that there is every reason to believe that a submarine bank extends from Newfoundland to the British Isles, to which they propose to anchor the wires, supported in cork tubes, at intervals of 10 miles, and have appealed to Congress to aid them in the enterprise, by appropriating a public vessel for their use, to ascertain the truth concerning the nature of the bottom. Should they not find soundings, they state they could still manage to anchor the buoys by means of buckets, &c. Mr. Lake's project for the same purpose, differs from this in not requiring buoys, except at each extremity, to avoid friction; but he considers that the impinging upon America, so far north as Newfoundland, would expose it to the danger of being carried away on the breaking up of the ice in the spring; he, therefore, proposes to carry it further south, and estimates the expense of laying one wire from England to the neighbourhood of Philadelphia at \$5,500—copper wire being employed. The petitioners close their address to Congress with an exhortation—"Not to allow the British Government to anticipate the United States in this sublime project." They need, however, scarcely fear competition, when the expense of a few hundred pounds prevents the laying of the wire between this country and France.

**IMPROVED PATENT ROPE MACHINERY.**—We have had an opportunity of examining some machinery invented by Mr. Andrew Smith, engineer and patentee of the wire rope. By this machinery six times the quantity of rope can be manufactured than by that hitherto in use, and much better in quality. The Lords Commissioners of the Admiralty have inspected the machinery at work, and were much pleased with its operations; their engineer, Captain Ellis, reported to their lordships that it is the most perfect machinery of the kind yet constructed, and recommended its application to the dockyards. We understand that their lordships have requested Mr. Smith to let them know its expense.

**MANUFACTURE OF GOLD.**—The Editor of the *Liverpool Albion*, after remarking on the communication of "B. C. D." in last week's *Mining Journal*, says—"This, however, is nothing to what is asserted by an ironfounder of this town. This gentleman must have discovered the true philosopher's stone, which so many sages of the olden time spent out their lives in trying to obtain. He declares that he has found out a process by which he can change any quantity of iron into gold. Before three months are over, he says, we shall hear more of this marvel. He promises to produce gold in tons; in short, in any quantity. Those who are thinking of a voyage to California had better pause, for the produce of the diggings will, when this wonderful discovery is brought to light, and its effects realised to the world, be valueless. The Government had better, also, take into timely consideration how they will estimate the amount of the national debt; and as to gold-borders, they had better look to it, for penny-pieces will be of as much more value than shillings, as copper is than iron—unless, indeed, our Government prove honest, and take minted gold at its full value, repaying us in platinum, or copper, or whatever other material may be deemed best as a representative of social wealth."

**QUICKSILVER FROM CALIFORNIA.**—Yesterday there were exhibited in the Exchange News-room of this town two large lumps of quicksilver ore, one of them weighing about 50 lbs., the other about half the size; they are the produce of Santa Clara Mine, in Upper California, belonging to Mr. Alexander Forbes, of San Blas, and brought here in the *Admirante*. It is supposed they contain from 60 to 70 per cent of quicksilver. —*Liverpool Mercury*.

## IMPROVEMENTS IN MANUFACTURING TUBES.

[Specification of patent granted to Robert Walter Winfield, of Birmingham, manufacturer, and John Ward, of Birmingham, aforesaid, a workman in the employ of the said Robert Walter Winfield, for certain improvements in the manufacture of tubes, and in the manufacture of certain articles made in part of tubes.—Inrolled March 14.]

This specification sets forth the nature and extent of this invention under two distinct parts; the first part having reference to the manufacture of that class of tubes termed taper tubes (that is, tubes having a tapering form); and the second part having reference to the manufacture of gas tubes.

First. As regards the manufacture of taper tubes, the process consists in taking a mandril of the proper figure for the tube required to be made, and placing thereon the sheet metal for the tube, cut and soldered into a somewhat tubular form, as usually practised; but instead of, as usual, drawing the mandril with the roughly formed tube placed thereon through the common draw-plate, they are to be drawn through a ring of some metal or material (tin, for instance), of just such a capacity for yielding to pressure, that the same shall offer sufficient resistance to press the tube into the required form, and yet allow of a gradual increase of diameter. The regulation of the diameter being provided for, by making the draw rings of different metals or substances, of varying degrees of softness. When it is required to make a taper tube, which is of a twisted form, it is necessary to give rotary motion either to the mandril (and, consequently, to the roughly formed tube placed thereon), or to the draw-ring, which motion may be imparted by any approved method.

With regard to the second part of this invention the principle consists in the use of double-tubes for gas fittings, and is effected by making two tubes in the ordinary manner, one of such tubes being of less diameter than the other, and then drawing the smaller tube within the other upon a mandril, and afterwards passing the same through the common draw-plate, by which the two tubes become equivalent to one tube, but of greater strength; and, according to the patentee, much better adapted for the purposes of gas fittings than as at present manufactured. The claims under this patent are to the invention substantially above stated.

Patent-office and Designs Registry, 210, Strand, March 15.

## THE BRITISH BANK.

It has long been matter of surprise to us that, among the numerous joint-stock banks established within the last 20 years in the metropolis, the system of banking long adopted in Scotland, with such eminent success, should not have been tried here. This system, while it gives every security to the man of wealth in the deposit of his capital, encourages and aids the frugal and deserving tradesman, who may be pressed by some unforeseen emergency. We are happy to see, by our advertising columns, that it has been determined, at length, to establish a bank on this system, the names of the directors to which are a sufficient guarantee for the *bona fide* character of the undertaking, and that it will be carried out to profitable results. The bank will receive deposits at interest, discount bills, make advances on approved securities, grant cash credits, and transact other banking business. Granting cash credits is a feature confined to Scottish banking; the plan simply being that, on any two unexceptionable persons becoming security for a third party engaged in trade, the latter has a drawing account with the bank to the amount of that security; a system which must, under numerous untoward circumstances, and to many young tradesmen, prove of most reasonable service; and who, if they properly use, and not abuse, it, will make it the stepping-stone to future wealth and independence. This will be the first bank in London incorporated by Royal Charter; and it will be required to make a statement of its assets and liabilities once every month; and if at any time one-fourth of its paid-up capital is lost, its affairs shall be wound up, thus confining the liability of each shareholder to one-fourth the amount paid on his shares. It is an unquestionable fact, that this system of banking has amazingly stimulated the agricultural and manufacturing industry of Scotland, and which, within the last century, has no parallel in the history of nations.

## PREVENTION OF MINE ACCIDENTS.

Among the numerous ingenious suggestions which have for years been made public, for giving greater confidence to the working miner while toiling at his dismal subterranean labour, and preventing the so frequent recurrence of those fatal catastrophes by which so many hundreds of our fellow-beings are suddenly launched into eternity, gutta percha tubing has been proposed, on the principles of Whishaw's Telephonon, or speaking telegraph. This substance being so extraordinary a conductor of sound, lengths of the tubing might be carried down the pit to various parts of the mine, terminating near the working places of the men, and extended as they proceeded. A conversation may be kept up at the distance of a mile or more, with a moderate sized tube; and the plan proposed is, to have the ends so constructed that a shrill whistle would give alarm to the men below, when any accident happens at surface, such as breaking of machinery, &c.; or the men below could make themselves heard at surface, to give notice when assistance was required. Having the end of the tube fixed, in a convenient position at surface, with a whistle-terminus, for calling the bankman's attention, and a mouth-piece for conversation, the tube is led down the side, or corner, of the shaft, and branches carried to the several working points, where each termination of the tube should be also furnished with a mouth-piece and whistle. By these simple means, attention having been first called by the whistle, information could be instantaneously conveyed to surface of any casualty happening below, or to those beneath of the machinery being defective, likely increase of water from injury to pumps, or any other unforeseen accident. Means would, of course, be instantly adopted for the rescue of the men; and it appears to us, that this simple and economical apparatus might be the means of saving many lives, and preventing much destruction of property.

## AMSTERDAM WATER-WORKS COMPANY.

Among all the absolute necessities of life, particularly in large and thickly populated cities and towns, there is certainly no one element on which depends the comfort, cleanliness, health, and even the very existence, of the inhabitants, as an unfailing supply of pure and wholesome water. In Amsterdam, water laid on to the house, and supplied by machinery, is unknown; and from its peculiar geographical position it is entirely dependent for a supply from the Rhine, brought in boats of a peculiar construction a distance of several miles, and which, in winter, cannot get up the canals, on account of the ice, and the inhabitants are obliged to put up with the waters of the canals which intersect the streets in all directions, and which are brackish, turbid, and totally unfit for use. For the water thus supplied, the population, amounting to 300,000 people, pay 3 centimes for 4 gallons in summer, but as high as 10 centimes for 4 gallons in winter, when the supply is altogether irregular, and not to be depended on.

For upwards of a century have attempts been made to get good fresh water by digging wells and boring, but hitherto without success, as from the formation of the strata being only sandy deposits reclaimed from the sea, and alluvium, to great depths, the salt water percolates it in all directions, and renders the water unfit for use. The object of this company is, therefore, to supply the city with pure water, which will be conveyed by a covered aqueduct from the Rhine, near Utrecht, to Amsterdam, and passed over the numerous bridges, and under the canals, by iron pipes, with flexible joints; and, instead of the household paying for laying on from the main, as in England, the company will lay on a service-pipe to every house, and the charge will be according to the size of the cistern, or so much per head per quarter, as may be decided on. The privilege of supplying Amsterdam with water has been conceded, in perpetuity, solely to this company, by a grant direct from the king, confining them to the maximum charge of 8½ centimes per 8 gallons, being little more than half what they pay at present; but according to the calculations of the engineers, founded on the most carefully compiled data, they could realise a profit of 24 per cent. per annum on the capital invested, at a charge of 13 centimes per 16 gallons. When it is considered, from the increase in both comfort and economy that this company will convey to the inhabitants, that scarcely an inhabitant will be without their supply, it is but reasonable to expect considerable, and unusual profits; and, from the excellent constitution of Holland, its paternal Government, and the good sense and proverbial industry of the people, through which the kingdom has stood unmoved amid the convulsions of Europe, the undertaking will be safe and certain as an investment.

The capital is 600,000, in 50,000 shares of 200 each; deposit, 25 per share; it will be a *société anonyme*, which limits the responsibility of each shareholder to the amount subscribed, and the administration of its affairs are exclusively vested in a London board.

**RAILWAY ARCHES AS REFUGES FOR DESTITUTE PERSONS.**—The philanthropic idea of converting the railway arches into temporary dormitories for the destitute persons that have no where to lay their heads, who abound in this metropolis now in prospect of being carried out, a society called the Samaritan Society of England being in the course of formation, whose object will be to erect suitable buildings in the arches (for which plans on the most economical principle have been prepared), and carry out such arrangements as shall not only afford nightly shelter to the unhappy wretches who now prowl the streets, but shall eventually lead to such a classification of the destitute vagrant poor, as will lead to the restoration to decent society of those who are worthy of it, and ultimately to the suppression of vagrancy and mendicancy. We think these most meritorious objects, and trust the society will meet with the success and support it deserves.

## Original Correspondence.

## THE GOLD EXPERIMENTS.

SIR.—The communication of "B. C. D." in your Journal of the 10th inst., will probably be received in many quarters with great suspicion; and I am free to confess that I should have been but little inclined to give credence to the statements therein made had they not forcibly recalled to my mind certain appearances occurring in some experiments in which I myself took an active part. Those experiments consisted in placing different substances for a considerable length of time under the influence of galvanic and magnetic currents. On more than one occasion we perceived, in a fracture of the materials which had been so experimented upon, a surface of glossy yellow dust, as fine, and not more in quantity, than the bloom which appears on some fruits. These appearances we attributed to a small quantity of iron pyrites, or phosphate of lime, which we supposed might have either got in by accident, or have existed in the materials made use of, and have been collected in the form in which it was discovered. Had we, like "B. C. D.," collected a sufficient quantity to test it, it is possible we might have anticipated his discovery.

There is nothing unnatural or unphilosophical in the idea that gold, or other metals, may be formed from other matter. We must either believe that the world was created containing just a certain precise quantity of gold, so much silver, so much copper, &c., or we must believe that those and other metals have been, and probably are now being, formed in the bowels of the earth, by some process as yet unknown to us; and, of the two, the latter appears to me much more consistent with the course of Nature and observed facts.

It is but of recent date that earths were decomposed, and found to be oxides of metals. Future experimenters may be able to decompose metals, and show them to be combinations of some base with one or more of those subtle fluids which we only know at present by their universal influence on organic and inorganic matter.—N.: March 12.

## THE ELECTRIC LIGHT.

SIR.—I have just read, in the *Mechanics Magazine*, a summary of Mr. Stait's specification. After some bombastic remarks about "Mr. Stait's long and arduous endeavours to subdue the lightning of the heavens—hitherto so fearful in its manifestations," the writer states that "one of the most striking pieces of information supplied by his present specification is the fact, that the chemical products of the batteries he employs are of greater value than the exciting elements employed, and that, consequently, the light developed costs literally nothing." Having been practically engaged in galvanic works of some extent, and having myself tried many experiments towards arranging a battery which might give some product more saleable than sulphate of zinc, I felt considerably interested by the above pompous announcement, and was not a little disappointed to find these vaunted improvements summed up in the precipitation of carbonate from sulphate of zinc by the sesquicarbonate of ammonia, and in the use of plates of lead and of iron as positive elements in the battery, not one of which can be called either new or useful.

Many years ago I tried lead and iron, as described in Mr. Stait's specification; but there is an obstacle to their use for which he provides no remedy, and of which, therefore, it is but fair to presume, he is ignorant. Iron and lead, as well as zinc, in their commercial state, contain a certain proportion of impurities which are electro-negative to the metals themselves. The consequence is, that when one of these metals is acted upon by an acid, in a galvanic circuit, the impurities, consisting of particles of carbon and other matters, gradually accumulate on the surface of the plate; a thousand minute galvanic circuits are formed; hydrogen is evolved; and the plate almost entirely ceases to perform its office. The high chemical equivalent of lead is of itself a sufficient obstruction to the use of that metal for the purpose in question. Iron (if the pure metal could be had cheap) might be used with advantage as a positive element in galvanic apparatus, for practical purposes; but neither lead, iron, nor even zinc, in their commercial state, can be depended upon for a single hour. The plates are consumed with more or less rapidly according to the strength of the acid employed, but they give only a mere fraction of the working power due from them. The evil is counteracted, in the case of zinc, by amalgamation; and my idea, as a practical man, is that, until some equivalent process can be applied to iron, the use of zinc will not be superseded.

I could point out several other peculiarities and impracticabilities in Mr. Stait's specification, but may, perhaps, better occupy your space by the following hint of a method by which the sulphate of zinc may be turned to account.—To a solution of sulphate of zinc add an equivalent of muriate of soda, also in solution; an exchange will take place, the muriatic acid combining with the zinc, and the sulphuric with the soda. By evaporation, the sulphate of soda may be crystallised, the muriate of zinc remaining in solution. From this solution the zinc may be precipitated in the form of oxide, by adding an equivalent of lime, in the state of cream. The soda, if not saleable as a sulphate, might be converted, by the usual process, into carbonate, and the oxide of zinc might be reduced into a metal almost chemically pure. Were the application of galvanism somewhat more extensive than it is, a good business might be done by collecting the sulphate of zinc from the different works, and reducing it in this manner.—N.: March 12.

## THE ELECTRIC LIGHT.

SIR.—I perceive, on reference to your Journal of last Saturday, that the remarks of mine on Mr. Stait's electric light, which you favoured me with inserting previously, although they have not elicited any explanation from that gentleman, have brought out some attempt at defence from "W. C. E.," who, from being so well initiated in the whole proceedings of the company, I must conclude is a party interested. Meagre as his explanations are, it is gratifying to learn that the affair "is progressing, and was never at a complete standstill;" yet I think the light having been so publicly blazoned forth, and thus led us all to believe that no difficulty existed in the way of its immediate adoption, the public have a right to expect a full explanation from Mr. Stait as to the difficulties he has to encounter, and whether he can clearly see his way towards its completion for purposes of general illumination. This surely he might do, without in the slightest degree or in any way endangering his right and interest in the discoveries he has already made, as his specification has, doubtless, been drawn up with sufficient care to render all his appliances in detail secure. I would be the last to attribute questionable motives to any one, but the scientific world, and the public at large, have been led to expect the immediate introduction of a light which, for brilliancy and economy, was to supersede every other description of artificial illumination; and instead of being kept in uncertainty and suspense, as they are at present, they ought to be informed whether there is any prospect of carrying the principle out, or if there appears to exist any insuperable bar to its success. I am aware with "W. C. E." that "it is an affair of no ordinary importance;" but all I contend for is, that its principles should have been better defined, and its success rendered certain in the mind of the patentee, before he led the world to expect too much.—E. L.: Newington, March 14.

## THE ELECTRIC LIGHT.

SIR.—Mr. Stait's friends are at it again. "W. C. E." has come forward to assist him; and a sorry attempt he makes at an apology. There is a class of persons proverbially required to be furnished with long memories. In the subject of my former letter, the necessity of tenacious recollection was apparent to carry the most truthful mind through such a useless and inconsequent rignarole, as required some 10 or 12 skins of parchment to establish a mystification as to the merit of Stait's patent; but I was not prepared to discover, in the last sentence of so short a communication as that of "W. C. E.," the contradiction of the first. Not, indeed, that there is a positive *assertio falsi*; on the contrary, measure each word by the rule, and reason would appear why Loyola himself, if he could return from his mansion of rest, might pride himself on so fair a specimen of Jesuitical cunning.

It sets out with an insinuation that "W. C. E." is quite disinterested—knows nothing of Mr. Stait; and, for aught your readers are to tell, may be Greener, King, Wright, or Bain—original promoters in modern days—or even Franklin in disguise, coming forward to do battle in behalf of injured innocence. One direct truth is told—as betimes the truth is told, though not believed from certain lips without corroboration. The public, *truly*, have not been gulled; and I will add, for the consolation of "W. C. E.," it will not be gulled while there is a Faraday and a Brunel to guide it. True, again, the public had not had to pay for their *whistle* as spectators of the "puppet-show." But softly, good Sir; the exhibition was assuredly not without its object. Every one does not pay for Punch; but some fools do. And I should like to know, who have become the



dupes (if any) during the performance of the electric light? There may be, unfortunately, a further analogy between the two cases; for, like Punch's pantomime, however promisingly begun, there may be a premature conclusion, unless the audience be liberal and approving.

The second paragraph opens with candour equal to the first, and Mr. Staitie is crowned with the honours of M. Le Moli's exhibition at the Duke of York's Column, as if to prove "W. C. E.'s" innocence or impartiality. Is this so, or is it rather to take credit before the world for that which was admittedly superior to Mr. Staitie's display? But what shall be said of the strain of virtuous indignation which pervades the whole? Must it not be genuine? Is it not disinterested? Does not "E. L." feel the most poignant remorse for the slander he has suggested? I fear, on the contrary, he will be reminded of the virtue described by the satirist, which would not be assuaged without a promise of marriage. "How green are those grapes," said the fox. The flies would not enter the spider's web, notwithstanding the temptation of a continuous invitation in the columns of the *Times*. It could never be, that honest responsible applicants would write for shares, in answer to an advertisement, without the guarantee of the name of a single known director; therefore, there is little cause for vaunting a forbearance that was totally uncalled for. But, at the last, the truth leaks out. "W. C. E." and Mr. Staitie are one and the same party, empowered and delegated to pledge themselves to eternal self-denial and seclusion—the natural consequences of waiting till the wares "are quite ready and fit for sale" in such hands. For my part, I advise your readers to prepare themselves with the contemplation of that supplemental beatitude which applauds those who renounce expectation, to avoid disappointment. With a few words of advice to "W. C. E." and Co., I have done. Let there be no more of this absurd prudery; there is every justification for "E. L.'s" imputation. Those who have acted unwisely in giving grounds for it, ought to be cautious, lest a closer inquiry should be provoked; and, probably, in that case, more causes for suspicion might be met in a progress from the ornamental brass plate on the door of the company's offices to the chair of the president of the board of directors—*verbum sat*.—F. W. C.: *City, March 15.*

#### ON IMPROVEMENTS IN THE ELECTRIC TELEGRAPH.

Sir,—I am anxious you should understand that my remarks upon Mr. Lake's communication on the above subject, published in your Number for last Saturday week, were not in the least intended as a criticism upon the same; and, indeed, few who read them could have supposed that I had any other object in view than to correct any false impressions concerning the present state of electro-telegraphy, that might have been produced in the minds of your readers by Mr. Lake's letter (the idea, for instance, that lightning conductors had never been applied to the telegraph posts; or that pairs of static needles were not used in the instruments), and to impart to Mr. Lake some little information upon the subject of which his letter would have led one to suppose him quite ignorant. My object was to assist, as far as I might be able, those engaged in telegraphic experiments in "the production of a perfect telegraph." Mr. Lake's idea of my letter, judging from the tone of his reply, appears to have been very different. He does not so much as allude to the parts which bear most upon the false notions conveyed in his view, and contents himself with attacking some omission, or mistake in expression, which occurred in the hurry in which mine was written, as you or any one else must have perceived; I hope, therefore, that you will allow me space for a few observations which I would make in reply.

Mr. Lake says nothing in answer to my statement, that every telegraph post upon the North-Western Railway is provided with a lightning-conductor of round (galvanized) iron wire. They project 6 in. above the top of the posts, which is amply sufficient to protect all the stretching apparatus, &c., attached; for it is well understood by all who "know anything of the behaviour of the electric fluid," that a conductor, if properly connected with the earth, will protect a circular space of a radius double its height above the highest point of the object to which it is fixed. Mr. Lake rather derides the conductors of 6 in., and asserts that "they would rather tend to an opposite effect" (in which way he does not show) to that of protecting the wires, owing to "the great distance that the posts are apart." Can it be possible that Mr. Lake supposes they are intended as a protection to the whole length of wire between the posts? Then, indeed, would they be not quite of sufficient length, for it would require a conductor of, as nearly as possible, 30 ft. in height above the post, to be attached to each, as Mr. Lake will find to be the case, if he apply the law which I have quoted, and calculate the distance of the posts apart as 40 yards, which is, I believe, that now constantly observed.

Mr. Lake does not allude to the hint contained in my letter, that the use of gutta percha supports for the wires upon the posts, proposed by him as quite a new idea, would only be to carry out the patent of Mr. Reid, in which a distinct claim is made for its application to that purpose, and a disclaimer of its use as a covering for the wire.\* I would here remark, that there would be no advantage derived from the use of lighting conductors, except at the posts, if the wires were covered with gutta percha; and I would propose that the upper wire, through the whole length of every telegraphic line, should be used solely as a "protector" for the others against lightning and atmospheric electricity; it might be connected at each post with the short 6-inch conductors, and at the extreme ends with the earth; by this means a perfect system of protection would be formed, without inverting the lightning by any additional height in the conductors. With respect to what Mr. Lake mentions as having been told him by a gentleman belonging to the Electric Telegraph Company, it appears to me that it was said under the impression that by "lightning conductors" Mr. Lake had meant the "lightning" divertors, or "protectors," which are used at all the stations, and consist, in their simplest form, of the brass balls, insulated from each other, and placed at the shortest possible distance apart; the wires are connected one to each of these, so that the greater part of the electricity of tension, which would otherwise pass through the coil, and damage both it and the needles, passes in a stream between the balls, and pursues its course along the line wires until it reaches an earth connection at one of the stations, as at the extreme end of the line.

With respect to the proposed telegraphic communication with America, Mr. Holmes alludes to a plan so far superior to any arrangement of wires, that I will not touch upon the subject further than to remind Mr. Lake that he was not the first who even proposed such a thing, as he states most truly in his first letter, that it was due to the "bold genius of Franklin." Whether it will ever be accomplished by any means, it is impossible to predict; but I agree with Mr. Holmes, in thinking it an impossibility, as long as its accomplishment depends upon submerged wires. If the circuit of earth and water were ever made available, and an instantaneous communication effected between London and New York, it would be more than a step towards the fulfilment of the words of Pope—

"To speed the intercourse from soul to soul,  
And waft a thought from India to the Pole!"

Hoping that I have not trespassed too much upon your valuable space, and that Mr. Lake and your numerous readers will perceive my former letter to have been not so much an attack upon his own as he represented it, I remain, yours, &c., G. E. D.: *March 15.*

#### SUBMARINE TELEGRAPH.

Sir,—It seems that Mr. Blunt, who I believe is employed in establishing the submarine telegraph between Dublin and Holyhead, has expressed his opinion of the insulation provided by the wire being coated with gutta percha in favourable terms, and, though he apprehends no attack on the part of the finny tribes of the ocean, he yet anticipates the conversion of the gutta percha into what he calls a hydrate—a "hydrate" of what?

Any fear of softening may be dispelled by coating the gutta percha with pitch, which would preserve the gutta percha unimpaired, and increase materially its insulation.—J. MURRAY: *Portland-place, Hull, March 12.*

#### THE SNOW STORM.

Sir,—A recent snow storm reminded me of a very simple precaution adopted with success, on my suggestion, many years ago, and which I recommended a few days ago to the captain of a steamer. It is simply to shield the eyes against the blinding effects of snow, by interposing a piece of black gauze or crape. To the guard and stoker on railways, the coachman, and at sea the captain, helmsman, and the one on the look out, the importance of this very simple recommendation must be sufficiently obvious.—J. MURRAY: *Portland-place, Hull, March 12.*

#### THE ANEROID.

Sir,—I am more and more convinced that the aneroid will fulfill the

\* If Mr. Lake wishes to satisfy himself of this, I would refer him to the *Mechanics' Magazine*, vol. xlviii, p. 316.

highest expectations that may be formed of it. On my recent voyage by steamer to Hull from London, we encountered a rather stormy sea. There was no previous indication, and it took even the captain by surprise. The beautiful aneroid, however, supplied me by Mr. Dent, sometime previous to the gale had suddenly receded from 30.5 + to 29.8 +; sure presage of the coming gale.—J. MURRAY: *Portland-place, Hull, March 12.*

#### VENTILATION OF COAL MINES.

Sir,—I am sure that every one who has witnessed, in the Polytechnic Institution, the ventilating power of a jet of high-pressure steam, as proposed by Mr. Goldsworthy Gurney, as far back, I believe, as the year 1825, can, as well as myself, have no doubt whatever of its most entire efficiency, as far as ventilation is concerned. The grand problem, therefore, seems to be most satisfactorily solved. It is a power of gigantic force, yet may be modified and controlled to any measure of the anemometer. This, together with its uniformity, constitutes in my mind its sterling excellence. I take a lively interest in the success of Mr. Gurney's plan and process, because we were both examined before the Common's Committee for the Prevention of Accidents in Coal Mines, in 1835; and I am, therefore, glad to find that Mr. Forster has carried out into successful practice Mr. Gurney's proposition in one of the collieries at Newcastle. I confess that I was not prepared for the amazing dynamic force I witnessed; but I have no hesitation in saying, that it is quite within the range of possibility to increase the force of the moving column to that of 200 miles an hour!—more than double that of a West India hurricane, which uproots the veterans of the forest, and levels the most solid masonry with the dust.—J. MURRAY: *Portland-place, Hull, March 12.*

#### IMPROVED MINERS' SAFETY-LAMP.

Sir,—It appears to me strange and remarkable that, while the attention of Parliament seems to be directed to the amelioration and preservation of the lives of the working classes, by establishing baths, wash-houses, abridging the hours of labour, &c., the annual awful sacrifice of human life from those sad catastrophes, explosions of fire-damp in mining operations, should be so entirely overlooked. It is a perfect farce to read, from time to time in the newspapers, the verdicts pronounced at the inquests of "Accidental death," when it should rather have been termed wilful neglect on the part of some person or persons unknown, from neglecting to use or seek after the best means of preventing such fatalities.

Now, although Sir Humphrey Davy's miners' lamp is, without doubt, constructed upon sound philosophical principles, as far as regards the beating and cooling properties of the different coils of woven wire of which it is composed; yet it has been found sometimes to fail, and rather caused explosions than prevented them.

It appears, therefore, to me that the only safety-lamp at all recommendable is one wherein all contact of the nascent hydrogen, or rather carburetted hydrogen, with the flame is entirely precluded, and the one I have now to propose seems most capable of answering that end.

I would recommend a stout vessel made of copper, similar to what I have drawn—it may either contain oil and wick or candle; the lamp is supplied with fresh air from the bottom through a gutta percha tube descending from the shaft into the mine; or there may be a main pipe or tube to supply one or more lamps, by means of smaller tubes and stop-cocks to give light to the miner. Very stout glass discs or bull's eyes may be fixed in the sides of the lamp, or they may be made to hold water, which, while it increases, like a lens, the power of the light, in case of a violent blow or fall, the dispersed water may possibly extinguish the light. If objection be made to the use of glass, for glass may now-a-days be obtained of unlimited strength and thickness, mica or horn may be substituted.

I trust, Sir, that my communication may be rendered of at least some service to the miner, the preservation of whose life, and his family from becoming helpless orphans, I have most in view. JOHN HORSLEY.

*Ryde, Isle of Wight, March 12.*

#### VENTILATION OF MINES AND COLLIERIES—GOVERNMENT INSPECTORS, &c.

Sir,—These important questions appear to occupy, at this moment, the principal attention of the mining public. The observations made in your last Journal by Mr. Richardson, C.E., show the great necessity of having all the known and useful applications duly recorded and distributed amongst colliery and mining engineers, so that they may avail themselves of the most improved applications when required. Mr. Richardson states, "That in the best managed collieries recourse is had to the furnace as a means of ventilation—not because it is perfect, but as the best system known." It is well known to men who have had extensive experience in subterranean works, that the upcast shafts are as irregular in their action as the common chimneys—not only in foggy and windy weather, but I have observed daily variations as constant as the oscillations of the mercury in the barometer, more especially within the tropics. It is also long known to many mining engineers, that to ventilate by blowing inwards, is as inefficient as it is improper. In driving long adits, where ventilating shafts cannot be conveniently sunk, no intelligent engineer of the present age would employ an air sower, nor a blower, to ventilate the end; he would, doubtless, use the well-known exhausting inverted tubs, or any other cheap and simple pneumatic machine. I have had them used many years ago for this purpose. On reference to your own Journal (March and April, 1836), you will find a description of one by Mr. Brunel, accompanied with a sketch, and also inserted in the *Mining Review*, No. 8, p. 351. It is not the mere simplicity of the inverted tubs (like our gasometers), worked in water, we beg attention to. They are of all sizes, round and square, made of wood and iron, according to the fancy of the engineer, and commonly applied in Germany, and other places, for many years: excepting their prodigious dimensions, there is nothing new in them. I have had drawings and models of them since 1835; but, said a Belgian engineer (in 1835), "it is *idée mûre*," the notion of pumping air at the top of the shaft from the workings below, that I think so admirable.

Near Verviers, in Belgium, an exhausting machine was at work in 1835, consisting of two large chests, 84 ft. square, with a 64 ft. stroke, drawing 1000 cubic feet per double stroke. This idea of pumping immense volumes of air from collieries in Belgium, at least, is due to a miner named Gerard, of that country. A machine was erected the same time in de l'Esperance, at Seraing, by M. Leon Symonis, of Verviers. M. Symonis thus writes of the efficiency of this machine at that date at Seraing:—"The effect of this is such at the greatest depths, that the miners are obliged to wear double clothing, to protect themselves from the cold. The machine of Seraing pumps 500 cubic metres per minute, or 17,500 cubic feet; 6 horse power are required to keep it in motion. An earnest desire that the principle of the machine may be of general service, and especially that the miner's terror—the fire-damp—may yet become *un fléau oublié*, a forgotten calamity, induces me to make this communication."

Description.—A brick culvert connects the top of the upcast shaft with the bottom of the exhausting tubs; the latter are furnished with valves in the ordinary manner. The rods by which they are suspended are attached by chains to the arched heads of a beam, and balanced. It is put in motion by a lever, and a connecting rod to the crank of a 6-horse power engine. The constant current by the alternate action of the two tubs (or pistons) is analogous to the continuous stream of all blast-engines.

Mr. Taylor obtained a prize from the Society of Arts, upwards of 20 years ago, for a model of a ventilating machine, by means of exhaustion, applied as above explained. Indeed it is, as already stated, the only effective means of ventilating a mine, or a colliery, with one shaft. Therefore, since these and numerous others, which I could mention, do not appear to be generally known, I think, as a first step towards improving the state of our mines and collieries, an office ought to be established in the Museum of Practical Geology for keeping records of all practical and useful inventions in connection with subterranean works, and send copies of the same to all the proprietors of works in the United Kingdom. This would remove the ignorance which now too often prevails, with respect to various useful inventions used from time immemorial in many mining districts, and prevent the plea on that head in cases of accidents.

To render a person qualified to inspect mines, he should not only be well acquainted with the various applications of machinery, general science,

&c., but he must be a practical man; otherwise, it would not only be useless to make such inspections, but dangerous in the extreme. The remedy would be worse than the disease. Much has been said and written against the prejudices of the Cornish miners, &c.; but on every occasion I have had to inspect their mines I have found them, like all other practical men, at all times most ready and willing to take the advice of a practical man of science. Notwithstanding the greater discipline and mining education on the continent, I have found much more pertinacity to continue the use of old and imperfect methods amongst the Germans than our miners; nevertheless I admit that, during my recent inspection of mines, collieries, and manufactories in Prussia, I saw much to admire, both in their mode of working and Government inspectors, and many things worthy of imitation. *London, March 12.* EVAN HOPKINS.

#### VENTILATION AND SAFETY-LAMPS.

Sir,—You, as well as those readers, must duly appreciate all useful inventions, more especially those for protecting the lives of human beings. Mr. Crane appears to have given considerable attention to the construction of the safety-lamps, and, according to his account, has effected improvements, for which he deserves the thanks of the mining community; and if his lamps should be found better, they ought to be used. However, be the lamp the most perfect, and the law the most stringent, and inspectors most constant, accidents will happen, in spite of all, if the air underground be left in a state more or less explosive from the want of ventilation. It is evident Mr. Crane is no mining engineer, nor does he appear to have had much experience with colliers and miners, and their operations underground, otherwise he would not have proposed such strange and inconsistent enactments. He considers that the security from explosion is more dependent on the perfection of lamps than ventilation. It is an abuse of the use of a valuable instrument, injurious to health to work in such a foul air, and rash in the extreme to place men's lives where an accident to one lamp in 3000 would be sufficient to destroy the whole. Such collieries ought to be stopped until the ventilation be made perfect; let the consequence, in other respects, be what it may.

Mr. Crane states that, "were safety-lamps exclusively used, explosions would not be caused by imperfect ventilation. Consequently, ventilation is of secondary and subordinate consideration," &c. This is as wrong in principle as it is dangerous in practice, and it is to be hoped that no mining engineer would be guilty of relying more on the security of the safety-lamp than perfect ventilation. The invention of such lamps would be a curse instead of a blessing, were poor men forced to work in such places by the aid of the lamp instead of by ventilation. Neither should ventilation in foul collieries be subject to variation, owing to changes in the state of the atmosphere; the current should be, and can be made, uniform and constant at all seasons, and this ought to be enforced.

Accidents occur, and will continue to occur, in mines, owing to rash acts of thoughtless men, for the want of proper timbering, decayed ropes, careless blasting, and numerous other causes, but the consequence is confined to such individuals; but the case would be very different in an atmosphere of explosive mixture—by one accident all perish. *London, March 13.* EVAN HOPKINS.

#### REMARKS ON LIGHTING COAL MINES.

Sir,—Had your correspondent, Mr. Crane, been a collier, I presume the *Mining Journal* would never have recorded so much ignorance as is displayed in the article, "Remarks on Lighting of Coal Mines," in last week's Journal. What does he imagine colliers are made of? Where a candle (naked) will not burn, the spark of life should not be tried. When I state that I helped to draw a man out of an explosive mixture dead, and only within a yard or two of where the Davy lamp burned, I shall be excused for the above remarks. Let me ask Mr. Crane the question—how would he like to drag out his existence six days out of the seven (10 to 12 hours daily), in a mine where the safety-lamp alone could be used? When a mine is in a state that the naked lamp cannot be used, let it be stopped. Use a Davy lamp for the purpose of examining the workings, before men are allowed in, but let that be an end to it for the day, unless some particular place has to be forced through. If, according to Mr. Crane's advice, Government enforces colliers to use safety-lamps, I will become a digger or tinker, but no longer a collier.—*March 14.*

#### VENTILATION OF MINES—STEAM, AND STRUVE'S PATENT.

Sir,—In your Journal of the 3d instant, De Vacy states, that "Mr. Gurney's first experiments in high-pressure steam ventilation were made so long ago as 1822, and published in 1826." In the same Journal, there is an interesting report of a meeting of about 40 Members of Parliament, "to inquire into the principle of the application of Mr. Gurney's system for the ventilation of coal mines by high-pressure steam." At this meeting, Mr. Gurney is reported to have said—"This acquaintance with Trevithick led to his experiments on locomotion, and ultimate application of high-pressure steam, to procure a draft up the chimney of steam-carriages on common roads, in 1826." He afterwards states—"The same principle, however, when carried into coal mine ventilation, required modifications to meet the conditions of the mine." In these "modifications," the practical value of the discovery, as applied to collieries, altogether depended, of which Mr. Gurney appears to have been aware; for he adds—"The modification, essential to success, was pointed out in the *Report of the South Shields' Committee*." This committee was instituted in 1839. As is well known, Mr. Gurney had previously given evidence, explanatory of his views on this subject, before a Parliamentary committee in 1835. It, therefore, appears from Mr. Gurney's own statement, that his discovery of high-pressure steam, as a means of mine ventilation, was subsequent to 1826, and first published in 1835. Mr. Vacy has probably been led into the discrepancy as to dates, by supposing "the application of high-pressure steam to procure a draft up the chimney of steam-carriages," and the ventilation of coal mines, to be synonymous discoveries; whereas "essential modifications" of the first invention, were necessary to the practicability of the principle in mine ventilation. Freely admitting Mr. Gurney's claim to the credit of the first discovery, reasonable doubts may still be entertained as to the originality of the "modifications" by which the principle is extended to the ventilation of collieries. As was stated, in your Journal of the 27th January, Mr. William Stewart used high-pressure steam for this purpose in the Hendreforgan Colliery in the year 1828, and, until 1833, with successful results. It is quite possible that Mr. Gurney may have heard of this circumstance before 1835; and the absence of any assurance on his part to the contrary, favours the presumption that he did. Be this as it may, the credit of having first used steam for such a purpose undoubtedly belongs to Mr. Stewart; and if Mr. Gurney was really the original discoverer, it was in theory only; whilst Mr. Stewart practically demonstrated its utility.

The use of high-pressure steam in ventilating collieries, has been tried in two instances—by Mr. Stewart in 1828, and by Mr. Forster in 1848. In one case, the quantity of air passed through the mine was 300 per cent. greater, and in the other 50 per cent. more, than had been effected by the use of the furnace; in both cases, therefore, the results were so far satisfactory. Yet there is one great objection to its use, which has not yet been satisfactorily answered, and which in many cases will preclude its adoption. In mines where the "upcast" is the "drawing" shaft, the men in going to, and returning from, their work, would have to pass through the high-pressure steam in the shaft, to the detriment of their health, if not to the risk of being suffocated by it.

In reply to a question by Sir Charles Lemon, "whether it was necessary that the apparatus should be in the upcast shaft?" Mr. Gurney observed, that a horizontal gallery on the surface of the earth, connected with the shaft, would act equally well. As this plan has not been tried, it can only be viewed as a theoretical expedient. An instance of a similar method of applying the furnace has recently come under the writer's observation, which completely failed in producing the effects that were anticipated from its known power, when placed near the bottom of the shaft. It is not, therefore, being too sceptical, if grave doubts are entertained of the expedient proposed by Mr. Gurney, to obviate this very important objection. Supposing the apparatus, then, to be placed at the bottom of the shaft, this system is not only inapplicable to many collieries, but is equally exposed with the furnace to destruction on the occurrence of an explosion. These are serious drawbacks to the benefits otherwise to be obtained by the use of steam in mine ventilation, and, in some measure, accounts for its not having been more generally resorted to. By Mr. Struve's patent ventilator, noticed in your last Journal, not only are all the advantages resulting from the use of high-pressure steam obtained, but the objections named, and many others, are completely obviated. The machine is in daily operation, and the real value of the invention, therefore, can be appreciated from practical results; by which it appears, that in working at a minimum effect, the air passing through the mine was increased from 3000 to upwards of 13,500 cubic feet per minute, and that it is capable of



drawing 40,000 cubic feet of air per minute out of the colliery, were it necessary. It might be so constructed as to draw 100,000 or 200,000 cubic feet in the same time; and this capability of extension is one of its best characteristics, as by this means a large reserved power may be obtained, so as to meet any exigencies which may arise in the state of the mine. The machine being placed on the surface, is removed from the danger of being damaged, or destroyed, by an explosion, and can be applied to "drawing shafts" with as great facility as to any other, and to levels, or adits, as well as to pits. In addition to the many advantages conferred by this invention, and which were noticed in your last paper, there is one which was omitted, and which deserves to be mentioned. This is the possibility of completely exhausting the goaves, or deads, of the mine of all accumulation of fire-damp, by closing the top of the downcast shaft, and working the machine on a Saturday, or Sunday, when the men are absent from the colliery. The mine would thus occasionally be cleared of fire-damp, instead of having in its wastes a progressive accumulation of it, as is now frequently the case. As a means of mine ventilation, Mr. Strave's invention appears to have all the requisites which have been so long and so much desired, without any of those disadvantages which have depreciated the value of the existing means, and the methods hitherto proposed to improve them. The great importance of this subject will, it is hoped, be deemed a sufficient apology for occupying so large a space in your columns in its description and discussion. J. RICHARDSON, C.E.

Neath, March 12.

#### ON VENTILATING COAL MINES.

SIR,—The reason why there are so many explosions of carburetted hydrogen gas in the southern districts arises generally—alas! too generally—from there being no system or method adopted underground for sweeping off the gas as it is generated. In many cases in this locality, as also in the Newcastle-upon-Tyne district, the way the mines are wrought the air is made to sweep every passage in the mine; this is effected by stoppings, or partitions of brick and lime, rather expensive, of course, but safe. Men also traverse daily the old workings, to remove falls from the roof, and to see that there is no obstruction to the circulating current, travelling generally about five miles per hour. This is not the general method in the southern districts, where the air takes almost any course it likes; and, although there is very little gas given out, compared with the northern districts, yet how frequent are the frightful explosions. It is of no consequence how much air there may be, the system underground will have to be altered. Mines, now unsafe, would, with half the quantity of air they have now circulating, be rendered perfectly safe; but it must be by causing every passage in the mine to be swept by the circulating current of air.

With respect to the best method of inducing ventilation, the fan is a very good method; but I prefer the furnace. At some of the deep workings, in the county of Durham, they have two large furnaces at the bottom of an upcast pit; this, together with the natural heat of the mine, and the heat arising from the candles, horses, miners, &c., sweeping every passage of the mine, renders coal mining very simple and very safe—in some cases a fire-lamp is used, in other cases no artificial aid is made use of, the natural heat of the mine being sufficient to induce circulation, but every passage is swept—hence the safety. A method has recently been revived at a colliery in the neighbourhood of Newcastle, of ventilating by high-pressure steam—Seaton Delaval Colliery. I wrote to two gentlemen in that locality for their opinion of it; the answer in both cases was condemnation. One writes—

"All the scientific men in the trade condemn it, and I think justly so; for discharging high-pressure steam into a shaft is neither more nor less than discharging it into a large air condenser: the moment the high-pressure steam issues from the pipe, the two antagonistic forces, expansion and condensation, are at work almost momentarily, the steam becomes reduced to the temperature of 212° and condenses, and, consequently, the ascending air becomes loaded with the water of condensation, which has to be carried off. Suppose the safety-valve loaded at 36 lbs. to the inch, which is below a temperature of 306° for every 154 cubic feet of steam issuing into the shaft it conveys 1 cubic foot, or 64 gallons, of water with it in the shape of vapour; if we suppose the issue of steam to be only 10,000 cubic feet per minute, this will give 126 gallons of water, or 1960 lbs. weight, to be conveyed up the shaft by the ascending current. It will not do; it is all very well for a short distance from the pipe of issue, but look at ulterior consequences. It is bad in principle; but the application of it is still worse. Mr. Forster, it appears, divided the steam into small jets, thus favouring condensation. Mr. Eadde, upwards of 30 years ago, tried it from one powerful pipe of issue, and abandoned it. It will make no progress here—indeed, the workmen say it is of no use."

How does it happen that Mr. Forster, in his public letter, makes the area of the upcast shafts so much less than the downcast? Is this science? It may do for Newcastle-upon-Tyne, but it will not do for Manchester. If Government determine upon inspectors of mines, this is the district from which it will be prudent to select them, combining science with practice.

Manchester, March 12.

CARBON.

#### ON THE DIFFERENT MODES OF USING ANTHRACITE.

SIR,—You favoured Mr. John Player, jun., of the Amman Iron-Works, by noticing a letter of his in your leading article of the Journal of the 24th February. Were it not that other circumstances have lately come to my knowledge, I should have allowed that to pass without comment, but now I feel called upon to solicit your indulgence, to make some observations upon the different modes of using that most valuable fuel—anthracite. Any person who is thoroughly acquainted with the properties of that coal, must be satisfied that it cannot be successfully applied as fuel for large steam-engines without a blast, and also the vapour of water. I consider that heat and combustion should be separated into two classes—one fixed, or local—that is, the burning of the solid part of coal, or carbon, which affects bodies only in actual contact, or very close proximity—the other gaseous, volatile, or diffused, caused by the burning of gas, either previously existing in the fuel, as in bituminous coal, or the result of the imperfect combustion of carbon, producing carbonic oxide, as also the new combinations, formed by passing steam through highly ignited carbon. It is the latter which is required for the rapid generation of steam in large boilers, where a great extent of surface must be acted upon simultaneously. Anthracite coal, as is well known, burns only on the surface. A newly-kindled fire of good-sized pieces of this coal, burns most beautifully for a time—the sharp points and angles, keeping the pieces of coal apart, allow a free passage for air; but these burn away first, and the pieces of coal gradually draw close together, shutting off the passage for air. The combustion of anthracite alone produces either carbonic oxide or carbonic acid, both gases much heavier than the air; and when cooled down, by passing through an extent of boiler flues, they check the draught of the chimney. On the other hand, bituminous coal contains hydrogen, the perfect combustion of which yields steam very highly rarefied, which assists the draught to a great degree. What Mr. John Player patented formed a part of a new form of boiler for burning anthracite, which I contrived and gave a sketch of to Mr. William Chambers, of Llanelly, who showed it to Mr. Player previously to the latter taking out his patent. The principle of this boiler was to keep a quantity of ignited coal in contact with a large surface, so as to render the fixed or local heat of carbon available, the coal being fed through a hopper at top, to prevent decrepitation by slow and gradual heating. The only successful application of Player's patent was the first boiler he set up at the Gwendraeth Works, which was a very near approximation to my plan; the *Anthracite* steamer was notoriously a failure. I proposed to Mr. William Chambers and Mr. John Biddulph the application of steam to assist the combustion of anthracite, and worked the engines at the Brea Colliery, Llanelly, with complete success; but some practical men, who witnessed it, made an objection to it, on account of taking steam from the boiler, the great desideratum being to economise steam, which they considered I was wasting. On this account, and the representations made by the above-named gentlemen, I waived a claim I had for recompense, and turned my attention to the manufacture of iron, into which they professed to be about to embark. Some time after this the South Wales Anthracite Association was formed, avowedly to extend the use of anthracite coal, but, in reality, to further the views of some speculators, by affording better opportunities for realising large sums by the disposal of leases. It is very ill-judged of Mr. Player to revive the recollections of that era of anthracite humbug (1839), in which he played so prominent a part, and the results of which have been so disastrous, reducing many worthy men to bankruptcy and insolvency. By this time I had become well acquainted with the peculiarities of anthracite, and was satisfied that the combination of a blast, and the application of the vapour of water, was the only mode of rendering this fuel available for steam navigation—a purpose for which its various qualities seemed to render it admirably adapted—its great weight, total absence of smoke, its compactness, preventing any injury from weather, the variations of climate, &c. After much study I contrived a grate, having a trough of water under each fire-bar, so as to enable me to use a powerful blast without injuring the grate-bars, and apply their heat to generate steam, without taking it from the boiler. I submitted this plan to the committee of the Anthracite Association, who allowed me the means of exhibiting it in operation. It gave satisfaction, but one of the gentlemen of the committee suggested that

it would be more satisfactory to have the report of some scientific man as to its efficacy, and Dr. Schaffhaeuser was sent for the purpose. The trial was made on a very hard frosty day—the water in the boiler and the cistern which supplied it was frozen. The trial occupied six hours only, more than half of that time being spent in getting the water to boil. I then took an account of the coal supplied to the fire, and the water to the boiler, and calculated that more than 9 lbs. of water, at the freezing point, had been converted into steam, and evaporated by 1 lb. of coal, or rather small culm, of very pure quality. Dr. Schaffhaeuser would not allow me to see what he made the result, but promised he would send me a copy of his report, previously to handing it to the committee of the South Wales Anthracite Association. This he never did, and it was not until long after that I learnt from one of the committee that he had made a very unfavourable report. He had given an account of all the coal used, and even put in the wood for lighting the fire, but gave an account only of the water actually evaporated—making it appear that 4½ lbs. of water was all that had been converted into steam by each pound of coal used. About the same time I submitted to the committee of the Anthracite Association the plan of a cupola which I had contrived, to enable ironfounders to use anthracite for melting metal instead of coke. This cupola had a separate feeding-place for the coal, the iron being thrown in at another opening. I made arrangements for two different applications of the blast—in one the air was driven through a stratum of coal before it touched the metal—in the other the air played in between the stratum of coal and the iron. By the first method the melting was very slow, but the metal of superior quality. By the second the fusion was very rapid, yielding very fusible but brittle metal. A cupola upon this plan was erected at the Gwendraeth Iron-Works, then just commencing, under the management of Mr. John Player, jun. A day was appointed for the committee of the Anthracite Association to come and inspect the working of my cupola. I went to the works in good time to get the cupola heated, but was told by the founders I could not have the blast, as Mr. Player had ordered them to get on with some particular castings out of the other cupola. I watched their movements, and saw nothing in hand but barrow wheels, and some ornamental rails for Mr. Player's house, then building. The committee came in haste to see how my cupola worked. I explained that it was not ready for a charge, as I had not been able to get the blast to heat the hearth. They would, however, have a charge put in, which was quickly run down, but the hearth being comparatively cold, part of the charge set at the bottom, and the cupola was condemned. It soon after came out that some of the gentlemen of the committee of the South Wales Anthracite Association, the proprietors of the Gwendraeth Works, and some others, were connected with Mr. John Player, jun., in his patent, a company had been formed to work it, and the *Anthracite* steamer built and fitted up to exhibit it. My plans had been condemned to drive me out of the field, and leave it clear for them. I was so much annoyed, that I addressed a letter to the Anthracite Association, detailing my opinions on the use of anthracite and its very superior properties, and, giving a short account of the preceding facts, printed and circulated it. This set the committee against me, and they have since done all in their power to thwart me. I have persevered in an attempt to carry out my plans, and am confident that I shall ultimately succeed. A gentleman having a great stake in anthracite, possessing ample means—a man, too, of deep thought, great energy, and determination—has undertaken the task of carrying out my chief hobby—the use of anthracite for fuel in the Government, and other large class steam-vessels. Success is certain: when my other projects are sure to follow in quick succession. I would just ask Mr. Player what is become of the *Anthracite*, of his patent, and of his late employers—the original Gwendraeth Anthracite Coal and Iron Company—who had the piper chiefly to pay, including the champagne drank on board the *Anthracite*, which used to be served out very freely, to divert attention when the steam was getting low?—T. H. LEIGHTON, March 10.

#### ANTHRACITE COAL.

SIR,—I beg to thank "Metallurgicus" for his valuable and interesting letter. It was not to the experiments of Messrs. Rivot and Phillips that I referred, but to some others—the account of which appeared in the *Mining Journal* more than 12 months previous; and these were instituted with a view to determine the effect of electricity in smelting copper ore. There is another letter in the *Journal* of the 10th instant, headed "Anthracite Coal," and ending with the signature "Flame"—two things not often met with together. It is true, some five years since, a splendid flame could be seen proceeding from an anthracite fire at a large snuff manufactory in the Minories, generated by Kymer and Leighton's patent grate; but I fear it is not to be seen there now. Several of these fires were in successful operation about London at that time. The fans were in all cases attached to some main gearing about the machinery in the works—so that no blast could be had until the steam was up in the morning, and all in motion. It is impossible to get steam up by means of anthracite, without a blast, in so short a time as with the quick burning coal from the north of England. This was the sole objection for stationary engines. In marine engines, it was said the water would be thrown out of the troughs. I think not; but, at all events, it is mere assumption to say it will, not having been tried—*in imports*. The most valuable applications of this invention will be found in manufacturing operations, principally chemical and metallurgical. It may be applied either to oxidise or deoxidise; any degree of heat may be produced, high enough to puddle iron, or sufficiently low to be used for drying crops of hay and corn in wet seasons, without injuring them. I have much to say on these subjects; but must not intrude further on your space this week. T. H. LEIGHTON.

March 12.

#### IRON AND CARBON.

SIR,—I think Mr. Mitchell has not expressed whether the steel he has investigated is cast or blistered steel. To indicate if there is any difference in the products of these substances appears necessary to the complete appreciation of his important investigations. As far as they have gone, it appears, after all, that there is a carburet, and that its presence in greater quantity, is a distinctive of gray iron. It is thus that first views, however they may appear to be contradicted in the progress of examination, are often found eventually to have had a measure of correctness. The elasticity and hardness produced by tempering steel I have often supposed was the mechanical effect of a certain sudden arrangement of particles of disengaged carbon acting on the molecules of the surrounding metal. Mr. Mitchell's analyses seem to favour such a view; but how is the term "combined carbon," which he applies to that peculiar form of it which he detects in white iron and tempered steel, borne out by the fact, that the sudden cooling of tempering produces it? Such an act, calling this powder into existence from the carburet which exists before tempering, seems more to indicate a mechanical disengagement than a chemical combination. I will not opine the theory; that a greater combination of the earthy bases, and of silicon among the rest, is more probable, when a greater presence of carbon increases heat, and, therefore, permits the alloy of these highly oxidisable substances with the iron at a high region of the furnaces, beyond the contact of oxygen; but there are other circumstances to be considered as influencing such result. It is true, where there is less carbon there is less heat; but the opportunity which a deficiency of carbon gives for the silicon to exert its powerful affinity upon the oxide of iron will, in itself, account for the absence of silicon in the iron, where there is silicated iron in the cinder, still it may be replied that these are, in some respects, convertible aspects of the same vein. Another consideration is, that in general specimens of coke iron are manufactured from the ordinary ironstones, where there is an intimate amalgamation, as it were, of the oxide of iron with the earths, especially silicon, so that the greater presence of silicon in such iron may arise as much from the nature of the ore, as from the greater heat of the coke fuel. On the other hand, in general, the ores which are smelted with charcoal are of a different composition, where silicon is either much less predominant, and merely interspersed in bulk, in contact with masses of oxide of iron.

To obtain a perfectly accurate deduction, the result of smelting the same ore with the two fuels ought to be investigated; but the averages, where the fuels are mixed, tends to confirm Mr. Mitchell's theory. I would call attention to the remarkable amount of magnesia in the ores of Ham, which are smelted without calcareous mixture. This, perhaps, affords the key to the fact why some primary ores can be smelted advantageously without a calcareous flux—the magnesia taking the place of lime in neutralising the silicon, and forming with it the vitreous compound necessary to protect the iron. Here we shall see the incalculable benefit to the manufacturer of employing strict chemical analysis. It has occurred that capitalists, being aware that certain primary ores—such as those of Danemora—are introduced into the furnace without any flux, have concluded, that the use of flux is a prejudice and error of practice, and have

persevered in applying the same process to materials to which Nature had probably denied the requisites for success. There are some practical points in the paper which require notice, respecting the density of coke and blast, and the height of the furnace, modified as all three must be interchangeably, by distinction of materials. Indeed, from the remarks of various correspondents, the principle which guides the use of height in the blast-furnace does not appear to be understood. But I will wait until the conclusion of these valuable and most interesting papers, which throw new lights on all the processes of the iron manufacture, and have an especial bearing on the phenomena of heated air. There are still, however, some hard points to be got over by the old school. I should like to see Mr. Mitchell's analysis of grey iron, and of the same iron after it had become white by remelting in the common air-furnace. DAVID MURPHY.

March 12.

#### HISTORICAL RECOLLECTIONS.—No. I.

THE LATE MR. JOHN BAGNALL, SEN., WEST BROMWICH.

SIR,—At a period like the present, when the spirit of enterprise is carried to so great an extent, it may not probably be ill-timed to lay before your readers a short record of events which have so signalled the history of some eminent men in the "manufacturing" part of the world—men who occupy a prominent position, not only in a private or social point of view, but as manufacturers—thereby giving to their fellow-creatures the means of obtaining subsistence, and frequently placing them in circumstances above the common wants of life. For an individual thus placed, it must be a pleasing reflection, just as he arrives at the close of his earthly career, to consider that he has been the means probably of administering to the wants of thousands—that he has frequently caused the hearts of many fathers to rejoice; while he has afforded consolation to the widow by caring for her progeny; and providing for their temporal necessities. It may be that he has had to grapple with difficulties, unknown to those dependent upon him; and that, while they are partaking of the fruit of their toil, their very looks betokening enjoyment, their employer is perhaps writhing in "commercial agony," and, for their sake, is possibly submitting to great sacrifice, so that their "daily bread" may be continued. Could the working population really know the anxiety which is often felt by their employers, and for their individual benefit, their obligations to them must certainly become much increased. They are human beings, and as such ought to be capable of appreciating the advantage they enjoy, and of exhibiting, in return, feelings of deep gratitude, instead of imbibing such hostile and inconsiderate views, as in too many instances even now exist. As soon, however, as reason takes the place of obstinacy, we may hope to see a better principle ruling and actuating their conduct. It is gratifying at all times to record successful instances of native genius and determined perseverance. Associated with these is a sure reward, which holds out encouragement for the exertions of the industrious—promising, beforehand, that their efforts be directed in the right channel. The commercial world is not wanting in examples of this nature; and, among the number, the individual selected for this occasion, furnishes ample proof. It will here be necessary to state that, as the greater part of the family of the person in question are now living, no observation which may be used in reference to the subject, will, it is hoped, be rendered objectionable to them. The brief history here given of their excellent father, whom the writer well knew, is offered to the world as an example worthy of imitation; while individuals of the present day are being held up to public repute, the writer deems it an act of only common honesty to place the individuals here represented in equal competition with them.

The late Mr. John Bagnall, sen., was originally a persevering, industrious, working collier—dependent for the support of himself and family upon the earnings obtained from such a source. Endowed by Nature with good qualifications, and possessing a marked determination of character, he was soon enabled to resign his post of "operative miner" for one of a more important nature—viz.: that of mineral surveyor, in which capacity he highly distinguished himself. By the exercise of steady perseverance, foresight, and economy, he was enabled shortly after this, in conjunction with a brother, who still survives him, to enter into business. A colliery was taken on royalty, which then offered itself—the management of which devolved more immediately upon himself. Here it was more especially that he felt the value of his practical mining knowledge. The management was conducted upon principles of the utmost economy; and the result was, accordingly, beneficial in proportion. Surrounded, as might be expected, with a varied class of individuals, whose conduct was marked, probably, with unenviable excesses, and with part of whom he would occasionally be brought in contact, it might be supposed that temptations on their part were neither few nor feeble. His firmness and decision enabled him to meet such with bold repulses; his mode of procedure was, therefore, unaltered. He had an object in view, for the accomplishment of which he was steadily progressing. He was ever found at his post in punctual discharge of business demands.

As a recompense of diligence and attention, associated with good natural talents, his judgment became matured; his mind, which was always sober and thoughtful, became enlarged; and his opinion in cases of "mining difficulty," was eagerly sought, and highly esteemed. We here see him raised to such a position in the world as to command the respect of his superiors—a position, moreover, rendered more valuable by his upward movements from the greatest obscurity. In the progress of time he had accumulated a sufficient capital to induce him to extend his operations. Accordingly, he embarked in the iron trade; here, too, he acted with his usual degree of caution. His doings in this department were at first small and feeble; he, however, gradually improved his position, till, with the assistance of his sons (some of whom had now grown up, and began to take an active part in business), he was enabled to make very considerable additions—so much so that, at the period of his death, very few manufacturers, and similar in extent, occupied a better position. It cannot be wondered that his sons, having such a valuable tutor, should make equal progress with their late father. They were now well established, and highly systematic in all their operations. Each appears to have caught the father's particular qualification for industry, and they continued to labour as they had done in their father's day, apparently taking for their motto, "onward." Few individuals, I presume, in the present day, have given a closer attention to their business, or exhibited more industrious habits, than the present firm of "John Bagnall and Sons;" and what is the result of all this? From the humble occupation of their father, as a working collier, events have so progressed, that now we may justly place them in the first rank of iron manufacturers. Their establishment, taken as a whole, is exceedingly large. Their mineral property has increased to an astonishing extent—so much so that, in the immediate vicinity of such operations, you can scarcely step without treading upon their property, and they are still augmenting it. The tide of prosperity is with them "ever flowing." So effectually have they conducted their operations, that no commercial depression, however severe it may be, can affect them. An idea of their great wealth may be gathered from the fact that, years ago, a certain banker pronounced the firm to be worth from 500,000l. to 600,000l. Since that opinion was given, we have had a good trade of some continuance—so that, if we take a moderate average of their annual profits, we may now consider them to be worth, probably, little less than 1,000,000l. sterling.

In writing such an history, allow me to say, that I have no personal gratification to serve, or any particular object to gain. I have volunteered unasked, unsought, and unknown, to give it to the world as a striking proof of what may be accomplished by combined energy, skill, and industry, and to stimulate others, if possible, to follow in the same steps. From the distinguished position which the family in question now occupy, who can predict to what point of eminence they may ultimately reach: imagination would carry us with them to the highest pinnacles of fame. One member of the family already holds the important appointment of one of her Majesty's justices of the peace; and who can tell but that, in the progress of time, we shall find them taking part in the Legislature of their country, or engaged in the Privy Councils of their Sovereign, where the advantage of their valuable, but well-earned, experience will be felt and appreciated? With your permission, Mr. Editor, I will furnish you with another case of a similar nature, of some convenient opportunity, which, in my opinion, deserves equal commendation. A SUBSCRIBER.

[For continuation of "Original Correspondence," see page 126.]

THE SURPASSING EXCELLENCE OF HOLLOWAY'S OINTMENT AND PILLS IN THE CURE OF OLD WOUNDS OR SORE THROATS. Four years since, Thomas Watkins, a cotton spinner at Manchester, received a severe wound in his arm by its coming in contact with the machinery. For a considerable time he was attended by several medical men at the infirmary, who decided that nothing could save the poor man's life but amputation. To this he objected, whereupon he was discharged as incurable. At this crisis his friends subscribed a trifle to purchase some of Holloway's ointment and pills, which, removed in a few weeks healed the wound, after so long a period of suffering. Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.



dupes (if any) during the performance of the electric light? There may be, unfortunately, a further analogy between the two cases; for, like Punch's pantomime, however promisingly begun, there may be a premature conclusion, unless the audience be liberal and approving.

The second paragraph opens with candour equal to the first, and Mr. Staitie is crowned with the honours of M. Le Moli's exhibition at the Duke of York's Column, as if to prove "W. C. E.'s" innocence or impartiality. Is this so, or is it rather to take credit before the world for that which was admittedly superior to Mr. Staitie's display? But what shall be said of the strain of virtuous indignation which pervades the whole? Must it not be genuine? Is it not disinterested? Does not "E. L." feel the most poignant remorse for the slander he has suggested? I fear, on the contrary, he will be reminded of the virtue described by the satirist, which would not be assailed without a promise of marriage. "How green are those grapes," said the fox. The flies would not enter the spider's web, notwithstanding the temptation of a continuous invitation in the columns of the Times. It could never be, that honest responsible applicants would write for shares, in answer to an advertisement, without the guarantee of the name of a single known director; therefore, there is little cause for venturing a forbearance that was totally uncalculated. But, at the last, the truth leaks out. "W. C. E." and Mr. Staitie are one and the same party, empowered and delegated to pledge themselves to eternal self-denial and seclusion—the natural consequences of waiting till the wares "are quite ready and fit for sale" in such hands. For my part, I advise your readers to prepare themselves with the contemplation of that supplemental benediction which applauds those who renounce expectation, to avoid disappointment. With a few words of advice to "W. C. E." and Co., I have done. Let there be no more of this absurd prudery; there is every justification for "E. L.'s" imputation. Those who have acted unwisely in giving grounds for it, ought to be cautious, lest a closer inquiry should be provoked; and, probably, in that case, more causes for suspicion might be met in a progress from the ornamental brass plate on the door of the company's offices to the chair of the president of this board of directors—*verbum sat*.—F. W. C.: City, March 15.

#### ON IMPROVEMENTS IN THE ELECTRIC TELEGRAPH.

SIR,—I am anxious you should understand that my remarks upon Mr. Lake's communication on the above subject, published in your Number for last Saturday week, were not in the least intended as a criticism upon the same; and, indeed, few who read them could have supposed that I had any other object in view than to correct any false impressions concerning the present state of electro-telegraphy, that might have been produced in the minds of your readers by Mr. Lake's letter (the idea, for instance, that lightning conductors had never been applied to the telegraph posts; or that pairs of astatic needles were not used in the instruments), and to impart to Mr. Lake some little information upon the subject of which his letter would have led one to suppose him quite ignorant. My object was to assist, as far as I might be able, those engaged in telegraphic experiments in "the production of a perfect telegraph." Mr. Lake's idea of my letter, judging from the tone of his reply, appears to have been very different. He does not so much as allude to the parts which bear most upon the false notions conveyed in his view, and contents himself with attacking some omission, or mistake in expression, which occurred in the hurry in which mine was written, as you or any one else must have perceived; I hope, therefore, that you will allow me space for a few observations which I would make in reply.

Mr. Lake says nothing in answer to my statement, that every telegraph post upon the North-Western Railway is provided with a lightning-conductor of round (galvanized) iron wire. They project 6 in. above the top of the posts, which is amply sufficient to protect all the stretching apparatus, &c., attached; for it is well understood by all who "know anything of the behaviour of the electric fluid," that a conductor, if properly connected with the earth, will protect a circular space of a radius double its height above the highest point of the object to which it is fixed. Mr. Lake rather derides the conductors of 6 in., and asserts that "they would rather tend to an opposite effect" (in which way he does not show) to that of protecting the wires, owing to "the great distance that the posts are apart." Can it be possible that Mr. Lake supposes they are intended as a protection to the whole length of wire between the posts? Then, indeed, would they be not quite of sufficient length, for it would require a conductor of, as nearly as possible, 30 ft. in height above the post, to be attached to each, as Mr. Lake will find to be the case, if he apply the law which I have quoted, and calculate the distance of the posts apart as 40 yards, which is, I believe, that now constantly observed.

Mr. Lake does not allude to the hint contained in my letter, that the use of gutta percha supports for the wires upon the posts, proposed by him as quite a new idea, would only be to carry out the patent of Mr. Reid, in which a distinct claim is made for its application to that purpose, and a disclaimer of its use as a covering for the wire.\* I would here remark, that there would be no advantage derived from the use of lighting conductors, except at the posts, if the wires were covered with gutta percha; and I would propose that the upper wire, through the whole length of every telegraphic line, should be used solely as a "protector" for the others against lightning and atmospheric electricity; it might be connected at each post with the short 6-inch conductors, and at the extreme ends with the earth; by this means a perfect system of protection would be formed, without inviting the lightning by any additional height in the conductors. With respect to what Mr. Lake mentions as having been told him by a gentleman belonging to the Electric Telegraph Company, it appears to me that it was said under the impression that by "lightning conductors" Mr. Lake had meant the "lightning" diverters or "protectors," which are used at all the stations, and consist, in their simplest form, of the brass balls, insulated from each other, and placed at the shortest possible distance apart; the wires are connected one to each of these, so that the greater part of the electricity of tension, which would otherwise pass through the coil, and damage both it and the needles, passes in a stream between the balls, and pursues its course along the line wires until it reaches an earth connection at one of the stations, as at the extreme end of the line.

With respect to the proposed telegraphic communication with America, Mr. Holmes alludes to a plan so far superior to any arrangement of wires, that I will not touch upon the subject further than to remind Mr. Lake that he was not the first who even proposed such a thing, as he states most truly in his first letter, that it was due to the "bold genius of Franklin." Whether it will ever be accomplished by any means, it is impossible to predict; but I agree with Mr. Holmes, in thinking it an impossibility, as long as its accomplishment depends upon submerged wires. If the circuit of earth and water were ever made available, and an instantaneous communication effected between London and New York, it would be more than a step towards the fulfilment of the words of Pope—

"To speed the intercourse from soul to soul,  
And waft a thought from India to the Pole!"

Hoping that I have not trespassed too much upon your valuable space, and that Mr. Lake and your numerous readers will perceive my former letter to have been not so much an attack upon his own as he represented it, I remain, yours, &c., G. E. D.: March 15.

#### SUBMARINE TELEGRAPH.

SIR,—It seems that Mr. Blunt, who I believe is employed in establishing the submarine telegraph between Dublin and Holyhead, has expressed his opinion of the insulation provided by the wire being coated with gutta percha in favourable terms, and, though he apprehends no attack on the part of the finny tribes of the ocean, he yet anticipates the conversion of the gutta percha into what he calls a hydrate—a "hydrate" of what?

Any fear of softening may be dispelled by coating the gutta percha with pitch, which would preserve the gutta percha unimpaired, and increase materially its insulation.—J. MURRAY: Portland-place, Hull, March 12.

#### THE SNOW STORM.

SIR,—A recent snow storm reminded me of a very simple precaution adopted with success, on my suggestion, many years bygone, and which I recommended a few days ago to the captain of a steamer. It is simply to shield the eyes against the blinding effects of snow, by interposing a piece of black gauze or crape. To the guard and stoker on railways, the coachman, and at sea the captain, helmsman, and the one on the look out, the importance of this very simple recommendation must be sufficiently obvious.—J. MURRAY: Portland-place, Hull, March 12.

#### THE ANEROID.

SIR,—I am more and more convinced that the aneroid will fulfill the

\* If Mr. Lake wishes to satisfy himself of this, I would refer him to the *Mechanics' Magazine*, vol. xiviii, p. 316.

highest expectations that may be formed of it. On my recent voyage by steamer to Hull from London, we encountered a rather stormy sea. There was no previous indication, and it took even the captain by surprise. The beautiful aneroid, however, supplied me by Mr. Dent, sometime previous to the gale had suddenly receded from 30.5 + to 29.8 +; sure presage of the coming gale.—J. MURRAY: Portland-place, Hull, March 12.

#### VENTILATION OF COAL MINES.

SIR,—I am sure that every one who has witnessed, in the Polytechnic Institution, the ventilating power of a jet of high-pressure steam, as proposed by Mr. Goldsworthy Gurney, as far back, I believe, as the year 1825, can, as well as myself, have no doubt whatever of its most entire efficiency, as far as ventilation is concerned. The grand problem, therefore, seems to be most satisfactorily solved. It is a power of gigantic force, yet may be modified and controlled to any measure of the anemometer. This, together with its uniformity, constitutes in my mind its sterling excellence. I take a lively interest in the success of Mr. Gurney's plan and process, because we were both examined before the Common's Committee for the Prevention of Accidents in Coal Mines, in 1835; and I am, therefore, glad to find that Mr. Forster has carried out into successful practice Mr. Gurney's proposition in one of the collieries at Newcastle. I confess that I was not prepared for the amazing dynamic force I witnessed; but I have no hesitation in saying, that it is quite within the range of possibility to increase the force of the moving column to that of 200 miles an hour—more than double that of a West India hurricane, which uproots the veterans of the forest, and levels the most solid masonry with the dust.—J. MURRAY: Portland-place, Hull, March 12.

#### IMPROVED MINERS' SAFETY-LAMP.

SIR,—It appears to me strange and remarkable that, while the attention of Parliament seems to be directed to the amelioration and preservation of the lives of the working classes, by establishing baths, wash-houses, abridging the hours of labour, &c., the annual awful sacrifice of human life from those sad catastrophes, explosions of fire-damp in mining operations, should be so entirely overlooked. It is a perfect farce to read, from time to time in the newspapers, the verdicts pronounced at the inquests of "Accidental death," when it should rather have been termed wilful neglect on the part of some person or persons unknown, from neglecting to use or seek after the best means of preventing such fatalities.

Now, although Sir Humphrey Davy's miners' lamp is, without doubt, constructed upon sound philosophical principles, as far as regards the heating and cooling properties of the different coils of woven wire of which it is composed; yet it has been found sometimes to fail, and rather caused explosions than prevented them.

It appears, therefore, to me that the only safety-lamp at all recommendable is one wherein all contact of the nascent hydrogen, or rather carburated hydrogen, with the flame is entirely precluded, and the one I have now to propose seems most capable of answering that end.

I would recommend a stout vessel made of copper, similar to what I have drawn—it may either contain oil and wick or candle; the lamp is supplied with fresh air from the bottom through a gutta percha tube descending from the shaft into the mine; or there may be a main pipe or tube to supply one or more lamps, by means of smaller tubes and stop-cocks to give light to the miner. Very stout glass discs or bull's eyes may be fixed in the sides of the lamp, or they may be made to hold water, which, while it increases, like a lens, the power of the light, in case of a violent blow or fall, the dispersed water may possibly extinguish the light. If objection be made to the use of glass, for glass may now-a-days be obtained of unlimited strength and thickness, mica or horn may be substituted.

I trust, Sir, that my communication may be rendered of at least some service to the miner, the preservation of whose life, and his family from becoming helpless orphans, I have most in view. JOHN HORSLEY.

Ryde, Isle of Wight, March 12.

#### VENTILATION OF MINES AND COLLIERIES—GOVERNMENT INSPECTORS, &c.

SIR,—These important questions appear to occupy, at this moment, the principal attention of the mining public. The observations made in your last Journal by Mr. Richardson, C.E., show the great necessity of having all the known and useful applications duly recorded and distributed amongst colliery and mining engineers, so that they may avail themselves of the most improved applications when required. Mr. Richardson states, "That in the best managed collieries recourse is had to the furnace as a means of ventilation—not because it is perfect, but as the best system known." It is well known to men who have had extensive experience in subterranean works, that the oldest shafts are as irregular in their action as the common chimneys—not only in foggy and windy weather, but I have observed daily variations as constant as the oscillations of the mercury in the barometer, more especially within the tropics. It is also long known to many mining engineers, that to ventilate by blowing inwards, is as inefficient as it is improper. In driving long adits, where ventilating shafts cannot be conveniently sunk, no intelligent engineer of the present age would employ an air sollar, nor a blower, to ventilate the end; he would, doubtless, use the well-known exhausting inverted tube, or any other cheap and simple pneumatic machine. I have had them used many years ago for this purpose. On reference to your own Journal (March and April, 1836), you will find a description of one by Mr. Brunel, accompanied by a sketch, and also inserted in the *Mining Review*, No. 8, p. 351. It is not the mere simplicity of the inverted tube (like our gasometers), worked in water, we beg attention to. They are of all sizes, round and square, made of wood and iron, according to the fancy of the engineer, and commonly applied in Germany, and other places, for many years: excepting their prodigious dimensions, there is nothing new in them. I have had drawings and models of them since 1833; but, said a Belgian engineer (in 1835), "it is *idée mûre*," the notion of pumping air at the top of the shaft from the workings below, that I think so admirable.

Near Verviers, in Belgium, an exhausting machine was at work in 1835, consisting of two large chests, 8½ ft. square, with a 6½ ft. stroke, drawing 1000 cubic feet per double stroke. This idea of pumping immense volumes of air from collieries in Belgium, at least, is due to a miner named Gerard, of that country. A machine was erected the same time in de l'Esperance, at Seraing, by M. Leon Symonis, of Verviers. M. Symonis thus writes of the efficiency of this machine at that date at Seraing:—"The effect of this is such at the greatest depths, that the miners are obliged to wear double clothing, to protect themselves from the cold. The machine of Seraing pumps 500 cubic metres per minute, or 17,500 cubic feet; 6 horse power are required to keep it in motion. An earnest desire that the principle of the machine may be of general service, and especially that the miner's terror—the fire-damp—may yet become an *à peu oublié*, a forgotten calamity, induces me to make this communication."

Description.—A brick culvert connects the top of the upcast shaft with the bottom of the exhausting tube; the latter are furnished with valves in the ordinary manner. The rods by which they are suspended are attached by chains to the arched heads of a beam, and balanced. It is put in motion by a lever, and a connecting rod to the crank of a 6-horse power engine. The constant current by the alternate action of the two tubs (or pistons) is analogous to the continuous stream of all blast-engines.

Mr. Taylor obtained a prize from the Society of Arts, upwards of 20 years ago, for a model of a ventilating machine, by means of exhaustion, applied as above explained. Indeed it is, as already stated, the only effective means of ventilating a mine, or a colliery, with one shaft. Therefore, since these and numerous others, which I could mention, do not appear to be generally known, I think, as a first step towards improving the state of our mines and collieries, an office ought to be established in the Museum of Practical Geology for keeping records of all practical and useful inventions in connection with subterranean works, and send copies of the same to all the proprietors of works in the United Kingdom. This would remove the ignorance which now too often prevails, with respect to various useful inventions used from time immemorial in many mining districts, and prevent the plea on that head in cases of accidents.

To render a person qualified to inspect mines, he should not only be well acquainted with the various applications of machinery, general science,

&c., but he must be a practical man; otherwise, it would not only be useless to make such inspections, but dangerous in the extreme. The remedy would be worse than the disease. Much has been said and written against the prejudices of the Cornish miners, &c.; but on every occasion I have had to inspect their mines I have found them, like all other practical men, at all times most ready and willing to take the advice of a practical man of science. Notwithstanding the greater discipline and mining education on the continent, I have found much more pertinacity to continue the use of old and imperfect methods amongst the Germans than our miners; nevertheless I admit that, during my recent inspection of mines, collieries, and manufactories in Prussia, I saw much to admire, both in their mode of working and Government inspectors, and many things worthy of imitation. London, March 12. EVAN HOPKINS.

#### VENTILATION AND SAFETY-LAMPS.

SIR,—You, as well as your readers, must duly appreciate all useful inventions, more especially those for protecting the lives of human beings. Mr. Crane appears to have given considerable attention to the construction of the safety-lamps, and, according to his account, has effected improvements, for which he deserves the thanks of the mining community; and if his lamps should be found better, they ought to be used. However, be the lamp the most perfect, and the law the most stringent, and inspectors most constant, accidents will happen, in spite of all, if the air underground be left in a state more or less explosive from the want of ventilation. It is evident Mr. Crane is no mining engineer, nor does he appear to have had much experience with colliers and miners, and their operations underground, otherwise he would not have proposed such strange and inconsistent enactments. He considers that the security from explosion is more dependent on the perfection of lamps than ventilation. It is an abuse of the use of a valuable instrument, injurious to health to work in such a foul air, and rash in the extreme to place men's lives where an accident to one lamp in 3000 would be sufficient to destroy the whole. Such collieries ought to be stopped until the ventilation be made perfect; let the consequence, in other respects, be what it may.

Mr. Crane states that, "were safety-lamps exclusively used, explosions would not be caused by imperfect ventilation." Consequently, ventilation is of secondary and subordinate consideration, &c. This is as wrong in principle as it is dangerous in practice, and it is to be hoped that no mining engineer would be guilty of relying more on the security of the safety-lamp than perfect ventilation. The invention of such lamps would be a curse instead of a blessing, were poor men forced to work in such places by the aid of the lamp instead of by ventilation. Neither should ventilation in foul collieries be subject to variation, owing to changes in the state of the atmosphere; the current should be, and can be made, uniform and constant at all seasons, and this ought to be enforced.

Accidents occur, and will continue to occur, in mines, owing to rash acts of thoughtless men, for the want of proper timbering, decayed ropes, careless blasting, and numerous other causes, but the consequence is confined to such individuals; but the case would be very different in an atmosphere of explosive mixture—by one accident all perish. London, March 13. EVAN HOPKINS.

#### REMARKS ON LIGHTING COAL MINES.

SIR,—Had your correspondent, Mr. Crane, been a collier, I presume the *Mining Journal* would never have recorded so much ignorance as is displayed in the article, "Remarks on Lighting of Coal Mines," in last week's Journal. What does he imagine colliers are made of? Where a candle (naked) will not burn, the spark of life should not be tried. When I state that I helped to draw a man out of an explosive mixture dead, and only within a yard or two of where the Davy lamp burned, I shall be excused for the above remarks. Let me ask Mr. Crane the question—how would he like to drag out his existence six days out of the seven (10 to 12 hours daily), in a mine where the safety-lamp alone could be used? When a mine is in a state that the naked lamp cannot be used, let it be stopped. Use a Davy lamp for the purpose of examining the workings, before men are allowed in, but let that be an end to it for the day, unless some particular place has to be forced through. If, according to Mr. Crane's advice, Government enforces colliers to use safety-lamps, I will become a digger or tinker, but no longer a COLLIER. March 14.

#### VENTILATION OF MINES—STEAM, AND STRUVE'S PATENT.

SIR,—In your Journal of the 3d instant, De Vacy states, that "Mr. Gurney's first experiments in high-pressure steam ventilation were made so long ago as 1822, and published in 1826." In the same Journal, there is an interesting report of a meeting of about 40 Members of Parliament, "to inquire into the principle of the application of Mr. Gurney's system for the ventilation of coal mines by high-pressure steam." At this meeting, Mr. Gurney is reported to have said—"This acquaintance with Trevithick led to his experiments on locomotion, and ultimate application of high-pressure steam, to procure a draft up the chimney of steam-carriages on common roads, in 1826." He afterwards states—"The same principle, however, when carried into coal mine ventilation, required modifications to meet the conditions of the mine." In these "modifications," the practical value of the discovery, as applied to collieries, altogether depended, of which Mr. Gurney appears to have been aware; for he adds—"The modification, essential to success, was pointed out in the Report of the South Shields' Committee." This committee was instituted in 1839. As is well known, Mr. Gurney had previously given evidence, explanatory of his views on this subject, before a Parliamentary committee in 1835. It, therefore, appears from Mr. Gurney's own statement, that his discovery of high-pressure steam, as a means of mine ventilation, was subsequent to 1826, and first published in 1835. Dr. Vacy has probably been led into the discrepancy as to dates, by supposing "the application of high-pressure steam to procure a draft up the chimney of steam-carriages," and the ventilation of coal mines, to be synonymous discoveries; whereas "essential modifications" of the first invention, were necessary to the practicability of the principle in mine ventilation. Freely admitting Mr. Gurney's claim to the credit of the first discovery, reasonable doubts may still be entertained as to the originality of the "modifications" by which the principle is extended to the ventilation of collieries. As was stated, in your Journal of the 27th January, Mr. William Stewart used high-pressure steam for this purpose in the Hendreforgan Colliery in the year 1828, and, until 1833, with successful results. It is quite possible that Mr. Gurney may have heard of this circumstance before 1835; and the absence of any assurance on his part to the contrary, favours the presumption that he did. Be this as it may, the credit of having first used steam for such a purpose undoubtedly belongs to Mr. Stewart; and if Mr. Gurney was really the original discoverer, it was in theory only; whilst Mr. Stewart practically demonstrated its utility.

The use of high-pressure steam in ventilating collieries, has been tried in two instances—by Mr. Stewart in 1828, and by Mr. Forster in 1848. In one case, the quantity of air passed through the mine was 300 per cent. greater, and in the other 50 per cent. more, than had been effected by the use of the furnace; in both cases, therefore, the results were so far satisfactory. Yet there is one great objection to its use, which has not yet been satisfactorily answered, and which in many cases will preclude its adoption. In mines where the "upcast" is the "drawing" shaft, the men in going to, and returning from, their work, would have to pass through the high-pressure steam in the shaft, to the detriment of their health, if not to the risk of being suffocated by it.

In reply to a question by Sir Charles Lemon, "whether it was necessary that the apparatus should be in the upcast shaft?" Mr. Gurney observed, that a horizontal gallery on the surface of the earth, connected with the shaft, would act equally well. As this plan has not been tried, it can only be viewed as a theoretical expedient. An instance of a similar method of applying the furnace has recently come under the writer's observation, which completely failed in producing the effects that were anticipated from its known power, when placed near the bottom of the shaft. It is not, therefore, being too sceptical, if grave doubts are entertained of the expedient proposed by Mr. Gurney, to obviate this very important objection. Supposing the apparatus, then, to be placed at the bottom of the shaft, this system is not only inapplicable to many collieries, but is equally exposed with the furnace to destruction on the occurrence of an explosion. These are serious drawbacks to the benefits otherwise to be obtained by the use of steam in mine ventilation, and, in some measure, accounts for its not having been more generally resorted to. By Mr. Struve's patent ventilator, noticed in your last Journal, not only are all the advantages resulting from the use of high-pressure steam obtained, but the objections named, and many others, are completely obviated. The machine is in daily operation, and the real value of the invention, therefore, can be appreciated from practical results; by which it appears, that in working at a minimum effect, the air passing through the mine was increased from 3000 to upwards of 13,500 cubic feet per minute, and that it is capable of



drawing 40,000 cubic feet of air per minute out of the colliery, were it necessary. It might be so constructed as to draw 100,000 or 200,000 cubic feet in the same time; and this capability of extension is one of its best characteristics, as by this means a large reserved power may be obtained, so as to meet any exigencies which may arise in the state of the mine. The machine being placed on the surface, is removed from the danger of being damaged, or destroyed, by an explosion, and can be applied to "drawing shafts" with as great facility as to any other, and to levels, or adits, as well as to pits. In addition to the many advantages conferred by this invention, and which were noticed in your last paper, there is one which was omitted, and which deserves to be mentioned. This is the possibility of completely exhausting the goaves, or deads, of the mine of all accumulation of fire-damp, by closing the top of the downcast shaft, and working the machine on a Saturday, or Sunday, when the men are absent from the colliery. The mine would thus occasionally be cleared of fire-damp, instead of having in its wastes a progressive accumulation of it, as is now frequently the case. As a means of mine ventilation, Mr. Sturtevant's invention appears to have all the requisites which have been so long and so much desired, without any of those disadvantages which have depreciated the value of the existing means, and the methods hitherto proposed to improve them. The great importance of this subject will, it is hoped, be deemed a sufficient apology for occupying so large a space in your columns in its description and discussion. J. RICHARDSON, C.E.

Neath, March 12.

#### ON VENTILATING COAL MINES.

SIR,—The reason why there are so many explosions of carburetted hydrogen gas in the southern districts arises generally—alas! too generally—from there being no system or method adopted underground for sweeping off the gas as it is generated. In many cases in this locality, as also in the Newcastle-upon-Tyne district, the way the mines are wrought the air is made to sweep every passage in the mine; this is effected by stoppings, or partitions of brick and lime, rather expensive, of course, but safe. Men also traverse daily the old workings, to remove falls from the roof, and to see that there is no obstruction to the circulating current, travelling generally about five miles per hour. This is not the general method in the southern districts, where the air takes almost any course it likes; and, although there is very little gas given out, compared with the northern districts, yet how frequent are the frightful explosions. It is of no consequence how much air there may be, the system underground will have to be altered. Mines, now unsafe, would, with half the quantity of air they have now circulating, be rendered perfectly safe; but it must be by causing every passage in the mine to be swept by the circulating current of air.

With respect to the best method of inducing ventilation, the fan is a very good method; but I prefer the furnace. At some of the deep workings, in the county of Durham, they have two large furnaces at the bottom of an upcast pit; this, together with the natural heat of the mine, and the heat arising from the candles, horses, miners, &c., sweeping every passage of the mine, renders coal mining very simple and very safe—in some cases a fire-lamp is used, in other cases no artificial aid is made use of, the natural heat of the mine being sufficient to induce circulation, but every passage is swept—hence the safety. A method has recently been revived at a colliery in the neighbourhood of Newcastle, of ventilating by high-pressure steam—Seaton Delaval Colliery. I wrote to two gentlemen in that locality for their opinion of it; the answer in both cases was condemnatory. One writes—

"All the scientific men in the trade condemn it, and I think justly so; for discharging high-pressure steam into a shaft is neither more nor less than discharging it into a large air condenser; the moment the high-pressure steam issues from the pipe, the two antagonistic forces, expansion and condensation, are at work almost immediately, the steam becomes reduced to the temperature of 212° and condenses, and, consequently, the ascending air becomes loaded with the water of condensation, which has to be carried off. Suppose the safety-valve loaded at 36 lbs. to the inch, which is below a temperature of 300°, for every 534 cubic feet of steam issuing into the shaft it conveys 1 cubic foot, of 64 gallons, of water with it in the shape of vapour; if we suppose the issue of steam to be 10,000 cubic feet per minute, this will give 128 gallons of water, or 1920 lbs. weight, to be conveyed up the shaft by the ascending current. It will not do; it is all very well for a short distance from the pipe of issue, but look at ulterior consequences. It is bad in principle; but the application of it is still worse. Mr. Forster, it appears, divided the steam into small jets, thus favouring condensation. Mr. Ruddle, upwards of 30 years ago, tried it from one powerful pipe of issue, and abandoned it. It will make no progress here—indeed, the workmen say it is of no use."

How does it happen that Mr. Forster, in his public letter, makes the area of the upcast shafts so much less than the downcast? Is this science? It may do for Newcastle-upon-Tyne, but it will not do for Manchester. If Government determine upon inspectors of mines, this is the district from which it will be prudent to select them, combining science with practice.

Manchester, March 12.

#### ON THE DIFFERENT MODES OF USING ANTHRACITE.

SIR,—You favoured Mr. John Player, jun., of the Amman Iron-Works, by noticing a letter of his in your leading article of the Journal of the 24th February. Were it not that other circumstances have lately come to my knowledge, I should have allowed that to pass without comment, but now I feel called upon to solicit your indulgence, to make some observations upon the different modes of using that most valuable fuel—anthracite. Any person who is thoroughly acquainted with the properties of that coal, must be satisfied that it cannot be successfully applied as fuel for large steam-engines without a blast, and also the vapour of water. I consider that heat and combustion should be separated into two classes—one fixed, or local—that is, the burning of the solid part of coal, or carbon, which affects bodies only in actual contact, or very close proximity—the other gaseous, volatile, or diffused, caused by the burning of gas, either previously existing in the fuel, as in bituminous coal, or the result of the imperfect combustion of carbon, producing carbonic oxide, as also the new combinations, formed by passing steam through highly ignited carbon. It is the latter which is required for the rapid generation of steam in large boilers, where a great extent of surface must be acted upon simultaneously. Anthracite coal, as is well known, burns only on the surface. A newly-kindled fire of good-sized pieces of this coal, burns most beautifully for a time—the sharp points and angles, keeping the pieces of coal apart, allow a free passage for air; but these burn away first, and the pieces of coal gradually draw close together, shutting off the passage for air. The combustion of anthracite alone produces either carbonic oxide or carbonic acid, both gases much heavier than the air; and when cooled down, by passing through an extent of boiler flues, they check the draught of the chimney. On the other hand, bituminous coal contains hydrogen, the perfect combustion of which yields steam very highly rarefied, which assists the draught to a great degree. What Mr. John Player patented formed a part of a new form of boiler for burning anthracite, which I contrived and gave a sketch of to Mr. William Chambers, of Llanelli, who showed it to Mr. Player previously to the latter taking out his patent. The principle of this boiler was to keep a quantity of ignited coal in contact with a large surface, so as to render the fixed or local heat of carbon available, the coal being fed through a hopper at top, to prevent decrepitation by slow and gradual heating. The only successful application of Player's patent was the first boiler he set up at the Gwendraeth Works, which was a very near approximation to my plan; the *Anthracite* steamer was notoriously a failure. I proposed to Mr. William Chambers and Mr. John Biddulph the application of steam, to assist the combustion of anthracite, and worked the engines at the Brea Colliery, Llanelli, with complete success; but some nautical men, who witnessed it, made an objection to it, on account of taking steam from the boiler, the great desideratum being to economise steam, which they considered I was wasting. On this account, and the representations made by the above-named gentlemen, I waived a claim I had for recompense, and turned my attention to the manufacture of iron, into which they professed to be about to embark. Some time after this the South Wales Anthracite Association was formed, avowedly to extend the use of anthracite coal, but, in reality, to further the views of some speculators, by affording better opportunities for realising large sums by the disposal of leases. It is very ill-judged of Mr. Player to revive the recollections of that era of anthracite humping (1839), in which he played so prominent a part, and the results of which have been so disastrous, reducing many worthy men to bankruptcy and insolvency. By this time I had become well acquainted with the peculiarities of anthracite, and was satisfied that the combination of a blast, and the application of the vapour of water, was the only mode of rendering this fuel available for steam navigation—a purpose for which its various qualities seemed to render it admirably adapted—its great weight, total absence of smoke, its compactness, preventing any injury from weather, the variations of climate, &c. After much study I contrived a grate, having a trough of water under each fire-bar, so as to enable me to use a powerful blast without injuring the grate-bars, and apply their heat to generate steam, without taking it from the boiler. I submitted this plan to the committee of the Anthracite Association, who allowed me the means of exhibiting it in operation. It gave satisfaction, but one of the gentlemen of the committee suggested that

it would be more satisfactory to have the report of some scientific man as to its efficacy, and Dr. Schaffhaeuser was sent for the purpose. The trial was made on a very hard frosty day—the water in the boiler and the cistern which supplied it was frozen. The trial occupied six hours only, more than half of that time being spent in getting the water to boil. I then took an account of the coal supplied to the fire, and the water to the boiler, and calculated that more than 9 lbs. of water, at the freezing point, had been converted into steam, and evaporated by 1 lb. of coal, or rather small culm, of very pure quality. Dr. Schaffhaeuser would not allow me to see what he made the result, but promised he would send me a copy of his report, previously to handing it to the committee of the South Wales Anthracite Association. This he never did, and it was not until long after that I learnt from one of the committee that he had made a very unfavourable report. He had given an account of all the coal used, and even put in the wood for lighting the fire, but gave an account only of the water actually evaporated—making it appear that 4½ lbs. of water was all that had been converted into steam by each pound of coal used. About the same time I submitted to the committee of the Anthracite Association the plan of a cupola which I had contrived, to enable ironfounders to use anthracite for melting metal instead of coke. This cupola had a separate feeding-place for the coal, the iron being thrown in at another opening. I made arrangements for two different applications of the blast—in one the air was driven through a stratum of coal before it touched the metal—in the other the air played in between the stratum of coal and the iron. By the first method the melting was very slow, but the metal of superior quality. By the second the fusion was very rapid, yielding very fusible but brittle metal. A cupola upon this plan was erected at the Gwendraeth Iron-Works, then just commencing, under the management of Mr. John Player, jun. A day was appointed for the committee of the Anthracite Association to come and inspect the cupola heated, but was told by the founders I could not have the blast, as Mr. Player had ordered them to get on with some particular castings out of the other cupola. I watched their movements, and saw nothing in hand but barrow wheels, and some ornamental rails for Mr. Player's house, then building. The committee came in haste to see how my cupola worked. I explained that it was not ready for a charge, as I had not been able to get the blast to heat the hearth. They would, however, have a charge put in, which was quickly run down, but the hearth being comparatively cold, part of the charge set at the bottom, and the cupola was condemned. It soon after came out that some of the gentlemen of the committee of the South Wales Anthracite Association, the proprietors of the Gwendraeth Works, and some others, were connected with Mr. John Player, jun., in his patent, a company had been formed to work it, and the *Anthracite* steamer built and fitted up to exhibit it. My plans had been condemned to drive me out of the field, and leave it clear for them. I was so much annoyed, that I addressed a letter to the Anthracite Association, detailing my opinions on the use of anthracite and its very superior properties, and giving a short account of the preceding facts, printed and circulated it. This set the committee against me, and they have since done all in their power to thwart me. I have persevered in an attempt to carry out my plans, and am confident that I shall ultimately succeed. A gentleman having a great stake in anthracite, possessing ample means—a man, too, of deep thought, great energy, and determination—has undertaken the task of carrying out my chief hobby—the use of anthracite for fuel in the Government, and other large class steam-vessels. Success is certain: when my other projects are sure to follow in quick succession. I would just ask Mr. Player what is become of the *Anthracite*, of his patent, and of his late employers—the original Gwendraeth Anthracite Coal and Iron Company—who had the piper chiefly to pay, including the champagne drank on board the *Anthracite*, which used to be served out very freely, to divert attention when the steam was getting low?—T. H. LEIGHTON: March 10.

#### ANTHRACITE COAL.

SIR,—I beg to thank "Metallurgicus" for his valuable and interesting letter. It was not to the experiments of Messrs. Rivet and Phillips that I referred, but some others—the account of which appeared in the *Mining Journal* more than 12 months previous; and these were instituted with a view to determine the effect of electricity in smelting copper ore. There is another letter in the *Journal* of the 10th instant, headed "Anthracite Coal," and ending with the signature "Flame"—two things not often met with together. It is true, some five years since, a splendid flame could be seen proceeding from an anthracite fire at a large snuff manufactory in the Minories, generated by Kymer and Leighton's patent grate; but I fear it is not to be seen there now. Several of these fires were in successful operation about London at that time. The fans were in all cases attached to some main gearing about the machinery in the works—so that no blast could be had until the steam was up in the morning, and all in motion. It is impossible to get steam up by means of anthracite, without a blast, in so short a time as with the quick burning coal from the north of England. This was the sole objection for stationary engines. In marine engines, it was said the water would be thrown out of the troughs. I think not; but, at all events, it is mere assumption to say it will, not having been tried—*Metallurgicus*. The most valuable applications of this invention will be found in manufacturing operations, principally chemical and metallurgical. It may be applied either to oxides or deoxidise; any degree of heat may be produced, high enough to puddle iron, or sufficiently low to be used for drying crops of hay and corn in wet seasons, without injuring them. I have much to say on these subjects; but must not intrude further on your space this week. T. H. LEIGHTON.

March 12.

#### IRON AND CARBON.

SIR,—I think Mr. Mitchell has not expressed whether the steel he has investigated is cast or blistered steel. To indicate if there is any difference in the products of these substances appears necessary to the complete appreciation of his important investigations. As far as they have gone, it appears, after all, that there is a carburet, and that its presence in greater quantity, is a distinctive of grey iron. It is thus that first views, however they may appear to be contradicted in the progress of examination, are often found eventually to have had a measure of correctness. The elasticity and hardness produced by tempering steel I have often supposed was the mechanical effect of a certain sudden arrangement of particles of disengaged carbon acting on the molecules of the surrounding metal. Mr. Mitchell's analyses seem to favour such a view; but how is the term "combined carbon," which he applies to that peculiar form of it which he detects in white iron and tempered steel, borne out by the fact, that the sudden cooling of tempering produces it? Such an act, calling this powder into existence from the carburet which exists before tempering, seems more to indicate a mechanical disengagement than a chemical combination. I will not opine the theory, that a greater combination of the earthy bases, and of silicon among the rest, is more probable, when a greater presence of carbon increases heat, and, therefore, permits the alloy of these highly oxidisable substances with the iron at a high region of the furnaces, beyond the contact of oxygen; but there are other circumstances to be considered as influencing such result. It is true, where there is less carbon there is less heat; but the opportunity which a deficiency of carbon gives for the silicon to exert its powerful affinity upon the oxide of iron will, in itself, account for the absence of silicon in the iron, where there is silicated iron in the cinder, still it may be replied that these are, in some respects, convertible aspects of the same vein. Another consideration is, that in general specimens of coke iron are manufactured from the ordinary ironstones, where there is an intimate amalgamation, as it were, of the oxide of iron with the earths, especially silicon, so that the greater presence of silicon in such iron may arise as much from the nature of the ore, as from the greater heat of the coke fuel. On the other hand, in general, the ores which are smelted with charcoal are of a different composition, where silicon is either much less predominant, and merely interspersed in bulk, in contact with masses of oxide of iron.

To obtain a perfectly accurate deduction, the result of smelting the same ore with the two fuels ought to be investigated; but the averages, where the fuels are mixed, tends to confirm Mr. Mitchell's theory. I would call attention to the remarkable amount of magnesia in the ores of Hamam, which are smelted without calcareous mixture. This, perhaps, affords the key to the fact why some primary ores can be smelted advantageously without a calcareous flux—the magnesia taking the place of lime in neutralising the silicon, and forming with it the vitreous compound necessary to protect the iron. Here we shall see the incalculable benefit to the manufacturer of employing strict chemical analysis. It has occurred that capitalists, being aware that certain primary ores—such as those of Danemora—are introduced into the furnace without any flux, have concluded, that the use of flux is a prejudice and error of practice, and have

persevered in applying the same process to materials to which Nature had probably denied the requisites for success. There are some practical points in the paper which require notice, respecting the density of coke and blast, and the height of the furnace, modified as all three must be interchangeably, by distinction of materials. Indeed, from the remarks of various correspondents, the principle which guides the use of height in the blast-furnace does not appear to be understood. But I will wait until the conclusion of these valuable and most interesting papers, which throw new lights on all the processes of the iron manufacture, and have an especial bearing on the phenomena of heated air. There are still, however, some hard points to be got over by the old school. I should like to see Mr. Mitchell's analysis of grey iron, and of the same iron after it had become white by remelting in the common air-furnace. DAVID MURPHY.

March 12.

#### HISTORICAL RECOLLECTIONS.—No. I.

THE LATE MR. JOHN BAGNALL, SEN., WEST BROMWICH.

SIR,—At a period like the present, when the spirit of enterprise is carried to so great an extent, it may not probably be ill-timed to lay before your readers a short record of events which have so signalled the history of some eminent men in the "manufacturing" part of the world—men who occupy a prominent position, not only in a private or social point of view, but as manufacturers—thereby giving to their fellow-creatures the means of obtaining subsistence, and frequently placing them in circumstances above the common wants of life. For an individual thus placed, it must be a pleasing reflection, just as he arrives at the close of his earthly career, to consider that he has been the means probably of administering to the wants of thousands—that he has frequently caused the hearts of many fathers to rejoice; while he has afforded consolation to the widow by caring for her progeny, and providing for their temporal necessities. It may be that he has had to grapple with difficulties, unknown to those dependent upon him; and that, while they are partaking of the fruit of their toil, their very looks betokening enjoyment, their employer is perhaps writhing in "commercial agony," and, for their sake, is possibly submitting to great sacrifice, so that their "daily bread" may be continued. Could the working population really know the anxiety which is often felt by their employers, and for their individual benefit, their obligations to them must certainly become much increased. They are human beings, and as such ought to be capable of appreciating the advantage they enjoy, and of exhibiting, in return, feelings of deep gratitude, instead of imbibing such hostile and inconsiderate views, as in too many instances even now exist. As soon, however, as reason takes the place of obstinacy, we may hope to see a better principle ruling and actuating their conduct. It is gratifying at all times to record successful instances of native genius and determined perseverance. Associated with these is a sure reward, which holds out encouragement for the exertions of the industrious—promising, beforehand, that their efforts be directed in the right channel. The commercial world is not wanting in examples of this nature; and, among the number, the individual selected for this occasion, furnishes ample proof. It will here be necessary to state that, as the greater part of the family of the person in question are now living, no observation which may be used in reference to the subject, will, it is hoped, be rendered objectionable to them. The brief history here given of their excellent father, whom the writer well knew, is offered to the world as an example worthy of imitation; while individuals of the present day are being held up to public repute, the writer deems it an act of only common honesty to place the individuals here represented in equal competition with them.

The late Mr. John Bagnall, sen., was originally a persevering, industrious, working collier—dependent for the support of himself and family upon the earnings obtained from such a source. Endowed by Nature with good qualifications, and possessing a marked determination of character, he was soon enabled to resign his post of "operative miner" for one of a more important nature—viz.: that of mineral surveyor, in which capacity he highly distinguished himself. By the exercise of steady perseverance, foresight, and economy, he was enabled shortly after this, in conjunction with a brother, who still survives him, to enter into business. A colliery was taken on royalty, which then offered itself—the management of which devolved more immediately upon himself. Here it was more especially that he felt the value of his practical mining knowledge. The management was conducted upon principles of the utmost economy; and the result was, accordingly, beneficial in proportion. Surrounded, as might be expected, with a varied class of individuals, whose conduct was marked, probably, with unenviable excesses, and with part of whom he would occasionally be brought in contact, it might be supposed that temptations on their part were neither few nor feeble. His firmness and decision enabled him to meet such with bold repulses; his mode of procedure was, therefore, unaltered. He had an object in view, for the accomplishment of which he was steadily progressing. He was ever found at his post in punctual discharge of business demands.

As a recompense of diligence and attention, associated with good natural talents, his judgment became matured; his mind, which was always sober and thoughtful, became enlarged; and his opinion in cases of "mining difficulty," was eagerly sought, and highly esteemed. We here see him raised to such a position in the world as to command the respect of his superiors—a position, moreover, rendered more valuable by his upward movements from the greatest obscurity. In the progress of time he had accumulated a sufficient capital to induce him to extend his operations. Accordingly, he embarked in the iron trade; here, too, he acted with his usual degree of caution. His doings in this department were at first small and feeble; he, however, gradually improved his position, till, with the assistance of his sons (some of whom had now grown up, and began to take an active part in business), he was enabled to make very considerable additions—so much so that, at the period of his death, very few manufacturers, and similar in extent, occupied a better position. It cannot be wondered that his sons, having such a valuable tutor, should make equal progress with their late father. They were now well established, and highly systematic in all their operations. Each appears to have caught the father's particular qualification for industry, and they continued to labour as they had done in their father's day, apparently taking for their motto, "onward." Few individuals, I presume, in the present day, have given a closer attention to their business, or exhibited more industrious habits, than the present firm of "John Bagnall and Sons;" and what is the result of all this? From the humble occupation of their father, as a working collier, events have so progressed, that now we may justly place them in the first rank of iron manufacturers. Their establishment, taken as a whole, is exceedingly large. Their mineral property has increased to an astonishing extent—so much so that, in the immediate vicinity of such operations, you can scarcely step without treading upon their property, and they are still augmenting it. The tide of prosperity is with them "ever flowing." So effectually have they conducted their operations, that no commercial depression, however severe it may be, can affect them. An idea of their great wealth may be gathered from the fact that, years ago, a certain banker pronounced the firm to be worth from 500,000l. to 600,000l. Since that opinion was given, we have had a good trade of some continuance—so that, if we take a moderate average of their annual profits, we may now consider them to be worth, probably, little less than 1,000,000l. sterling.

In writing such an history, allow me to say, that I have no personal gratification to serve, or any particular object to gain. I have volunteered unasked, unsought, and unknown, to give it to the world as a striking proof of what may be accomplished by combined energy, skill, and industry, and to stimulate others, if possible, to follow in the same steps. From the distinguished position which the family in question now occupy, who can predict to what point of eminence they may ultimately reach: imagination would carry us with them to the highest pinnacles of fame. One member of the family already holds the important appointment of one of her Majesty's justices of the peace; and who can tell but that, in the progress of time, we shall find them taking part in the Legislature of their country, or engaged in the Privy Councils of their Sovereign, where the advantage of their valuable, but well-earned, experience will be felt and appreciated? With your permission, Mr. Editor, I will furnish you with another case of a similar nature, at some convenient opportunity, which, in my opinion, deserves equal commendation. A SUBSCRIBER.

[For continuation of "Original Correspondence," see page 126.]

THE SURPASSING EXCELLENCE OF HOLLOWAY'S OINTMENT AND PILLS IN THE CURE OF OLD WOUNDS OR SCORFIONS BORES.—Four years since, Thomas Watkins, a cotton spinner at Manchester, received a severe wound in his arm by its coming in contact with the machinery. For a considerable time he was attended by several medical men at the infirmary, who decided that nothing could save the poor man's life but amputation. To this he objected, whereupon he was discharged as incurable. At this crisis his friends subscribed a tribute to purchase some of Holloway's ointment and pills, which remedies in a few weeks healed the wound, and after so long a period of suffering, sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.



## BIRMINGHAM PLATE GLASS COMPANY,

SILVERED, POLISHED, PICTURE, ROUGH, AND FLUTED PLATE GLASS, SMETHWICK, NEAR BIRMINGHAM, and 141, FLEET-STREET, LONDON.

From its CHEAPNESS, combined with its superior colour, quality, and durability, PLATE GLASS is entirely superseding "Patent Plate," and every other description of Glass, not only for shop fronts, but also for first-class houses.

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Estimates may be had on application, either personally or by letter, at the manufactory, Smethwick, near Birmingham; at 141, Fleet-street, London; or of any of the company's agents, who will supply purchasers at the manufacturers' prices.

Orders from any part of the kingdom promptly executed, and delivered at any Railway Station, carriage free.

## CWMBRAIN PATENT IRON REFINERY.—The

PROPRIETORS OF IRON FORGES AND MILLS are respectfully invited to MAKE TRIAL OF MR. BLEWITT'S REFINED IRON, OR METAL, PREPARED BY A NEW PATENT PROCESS.

whereby the IRON is completely FREED FROM THE IMPURITIES CONTRACTED IN THE BLAST-FURNACE, and, by judicious mixtures, rendered applicable to every kind of manufacture. Heretofore, the metal usually sold in the market has been produced from the worst pigs, scrap, and refuse of some particular blast-furnace, or set of furnaces, without any mixture, or any regard to quality, or the purpose for which it might be required. THE PATENT METAL IS PREPARED ON SYSTEM, and TO ORDER, for any of the following purposes:—

1. For BOILER and TANK-PLATES.
2. For TIN-PLATES, commonly called COKE-PLATES.
3. For STRONG CAST-IRON, RIVET, and ANGLE IRON.
4. This COMPOUND PUDDLED, best under the hammer into bloom, reheated, and rolled into a 6 or 8-inch bar, makes TOPS and BOTTOMS for FLANCH and OTHER RAILS, of very superior quality, and attended with less waste than any other kind of iron used for that purpose. It is also well adapted for nail-roads, horse-shoes, and for other ordinary uses of the blacksmith.

The PATENT METAL is marked with a squirrel, and the initials "R. J. B." and is to be had only at the "Cwmbrair Iron-Works," near Newport, Monmouthshire.

## ECONOMICAL STEAM-ENGINE.—Surpassing the Cornish.

CRADDOCK'S PATENT DOUBLE CYLINDER HIGH-PRESSURE EXPANSION AND CONDENSING ENGINE, ADAPTED FOR MARINE, LOCOMOTIVE, AND STATIONARY PURPOSES.

BOILER.—Tubular, free from deposit, and perfectly safe from explosion.

ENGINE.—Not half the weight or bulk of ordinary engines.

FUEL.—Not half that required by the best engines of the common kind.

WATER.—Under one gallon per horse-power per day of 10 hours, for all purposes, with air as the medium of condensation.

These engines are erected at a comparatively trifling expense, and are easily worked.

FOR SALE.

TWO 40-horse power ENGINES, suited to condense either by air or water.

ONE 25-horse power ditto ditto ditto

TWO 20-horse power ditto ditto ditto

ONE 14-horse power ditto ditto ditto

A PAIR OF OSCILLATING MARINE ENGINES, of 10-horse power.

PRICE.—£20 per horse-power.

These engines are quite new, with boiler, condenser, and regulating damper—all got up in the best and simplest manner. They are much simpler, and almost beyond comparison more compact than the Cornish engine, also more safe and economical than even these engines, yet the price of the Cornish is nearly double that at which these are offered.—Parties wanting engines will find in the above good bargains.

Apply to Thomas Craddock and Co., engineers, 36 and 38, Broad-street, Birmingham, where engines on the above principle may be seen at work.

Also ON SALE, THREE 4-horse HIGH-PRESSURE ENGINES, simply arranged, and well got up.—Price £12 per horse-power.

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BIRMINGHAM PATENT IRON TUBE COMPANY MANUFACTURE PATENT LAR-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, Tubes for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.

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MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 20th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—Malta—On the 20th and 29th of every month. CONSTANTINOPLE—On the 29th of the month. ALEXANDRIA—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and 47, High-street, Southampton.

## OVERLAND GOODS AND PARCELS FOR INDIA, ADEN, CEYLON, MADRAS, CALCUTTA, SINGAPORE, CHINA, and BOMBAY, should

be DELIVERED not later than noon on the 17th of each month; and if forwarded on the 19th, will be subject to an extra charge.

When the 18th falls on a Sunday, no package will be received after the 17th, and cases must not exceed 70 lb. in weight, and when measuring over one cubic foot, they must be strong, and well hooped at the ends.

Peninsular and Oriental Steam Navigation Company's Offices, 122, Leadenhall-street, London, Feb. 23, 1849.

## EMIGRATION FACILITATED.—Those persons who expect

their friends in AUSTRALIA to assist them in their OUTFIT, might write to their friends there to pay the money into the hands of S. W. SILVER & CO.'S AGENTS in AUSTRALIA, or to their connections in the district, who would be named on application to S. W. SILVER & CO., in London. The agent's acknowledgment would be received by S. W. SILVER & CO., as CASH at the exchange of the day, for the OUTFIT. This proposal will also be communicated through the COLONIAL JOURNALS. EMIGRANTS' sitting-out warehouse at No. 4, Bishopsgate-street (opposite the London Tavern), where colonial information may be obtained, and small parcels received and forwarded to the colonies.

N.B.—CADETS TO INDIA, and CABIN PASSENGERS generally to all parts of the globe (with experienced Female Managers in the Department for Ladies), fitted out as heretofore at 66 & 67, Cornhill, by S. W. SILVER & CO., OUTFITTERS, CLOTHIERS FOR HOME USE, and CONTRACTORS; and at St. George's-crescent, LIVERPOOL.

## PATENT CORK FIBRE.—For STUFFING MATTRESSES,

SQUABS, BOAT CUSHIONS, BOLSTERS, PILLOWS, &c.

FOR THE PRESERVATION OF LIFE FROM DROWNING AT SEA.

The floating quality or buoyancy of cork is known by everybody; it is needless to speak about it in an advertisement. The application of that quality in an available form at sea has never yet been achieved, and the years of the patentee's life have been spent in seeking the successful solution of that problem.

Mattresses and bolsters, sofa-cushions, and squabs, all articles of indispensable necessity in the cabin, when stuffed with cork fibre, in lieu of the ordinary material, become life-preservers in the hour of danger, while they subserve all their usual purposes at other times.

The efficiency of these life preservers is indisputable, as they form articles of daily use, are always at hand, and ready for service, in the event of any calamity from accident, shipwreck, or fire.

The mattresses and bolsters do not depend upon a waterproof or any particular covering—nor upon the exclusion of water—nor upon inflation by air—their buoyancy is not, in the slightest degree, impaired by saturation, leakage, perforation, or damage of any description—in fact, a mattress torn in several places will still float.

Steamboat and ship owners, members of yacht clubs, passengers, emigrants,—all must be interested in an invention which places human life beyond the risks incident to the sea. Even the use of boats may be without peril, when supplied with cushions stuffed with the cork fibre.

But the advantages of the cork fibre are numerous for general application as stuffing:

1. For cleanliness it is unsurpassed, as it affords no support for insect life.
2. It is a non-conductor of heat, and therefore eminently adapted for invalids.
3. It is a non-absorbent. No moisture is retained, but all fluids instantly permeate.
4. For India, and the tropics generally, it is invaluable. Every one familiar with tropical grievances, places foremost amongst them the ravages of the moth and other insects of like destructive habits. Bedsteads, sofas, cushions, horse-collars, carriage linings—all perish in a comparatively short period of time before these devastating vermin. Cork is a natural repellent of insect life, as the oils which promote its development and sustenance are absent.
5. Moreover, the best medical authorities agree that cork possesses properties which are alike preventive and curative of certain affections to which the human frame is subject, such as rheumatism, cramp, &c.

For all these reasons, the patent cork fibre is peculiarly adapted for the mattresses of barracks, uniforms, hospitals, lunatic asylums, orphan schools, and, indeed, for all institutions where the first requisites are—health and cleanliness.

To officers under canvas in campaign the cork fibre mattress will be invaluable, as it will preserve them from the effects of sleeping upon damp bedding, to which they owe so much of their ill-health in after life.

The mattresses, and all other manufactured articles, may be obtained of Messrs. Taylor and Sons, steamship and yacht fitters, Great Dover-street, Borough; and of Messrs. Silver and Co., general outfitters, Cornhill; also of most other respectable outfitters, upholsterers, and bedding manufacturers.

The fibre can only be had at the company's works, City Saw-Mills, Wenlock Basin, Regent's Canal, City-road.

"The recent lamentable loss of 170 lives on the coast of Essex (Floridian emigrant ship), would not have happened, had the unfortunate vessel which was wrecked had mattresses of this material on board."—Times, March 7.

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FINISHED and WORKING DRAWINGS executed with accuracy and dispatch.

## COMBINED VAPOUR ENGINE COMPANY.

PROVISIONALLY REGISTERED.

Capital £250,000, in 12,500 shares, of £20 each.

Deposit £3 per share—2s. to be paid upon allotment, and the remainder of the deposit upon complete registration.

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Applications for shares may be made to the secretary at the offices of the company, 47, Bedford-row, where prospectuses, with the form of application for shares, and every information respecting the company may be obtained, as well as cards of admission to view the engine.

This company has been formed for the purpose of carrying out a patented invention, known as the "Combined Vapour Engine."

The invention is applicable to all purposes for which steam-power is employed, and may be adapted to existing steam-engines, at a comparatively trifling cost.

By the application of this invention to the ordinary steam-engine, the power is more than doubled, without any increase in the consumption of fuel; and, consequently, a saving of at least one-half in the cost of working the engine, as well as in the space occupied, is effected.

The Combined Vapour Engine is exhibited in action every Friday, from One to Three.

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Sir JOHN PIRIE, Bart. (deputy-chairman of the Peninsular and Oriental Steam Navigation Company).

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## PATENT MINERAL PAINT.—After three years' trial on the

sides and bottoms of iron and timber-built ships, this PAINT has proved itself equal to copper as a protection from vegetation, as well as the sea-worm and all other adhesive matter. It is also peculiarly adapted for spoils and gutters, from railing, felt or wooden roof, tarpaulins, damp walks, or any other surface that requires to be made waterproof at a small cost, and is ready for use, in casks of 2 to 20 gallons.

Brilliant black, 2s. per gallon—Rich brown, 2s. 9s. per gallon.

EMERSON'S PATENT LIQUID CEMENT.—This valuable and economic PAINT is so adhesive, that it will cling to any surface—brick, Roman cement, and all other plastered work; and, being a rich cream colour, is more pleasing and natural in appearance than oil, and at an eighth of the cost. It is ready for use, will dry in a few hours, and possesses the property of protecting the walls as well as Roman cement. Sold in casks of 1 cwt. 2 cwt., and 3 cwt., at 15s., and 21s. per cask. GEO. LEAR & CO., Sole Agents, 16, Basing-lane, Chesham.

## PATENT ALKALI COMPANY'S METALLIC PAINTS.

COLOURS—BLACK AND PURPLE BROWN.

These paints (the products of a patent process), possess peculiar and valuable properties not otherwise attainable, and are perfectly free from the deleterious qualities of white-lead. They surpass all other paints ever yet discovered in point of DURABILITY and ECONOMY; two costs being more than equal to three of any other description. From their chemical composition, they are pre-eminently adapted for covering IRON; also STUCCO or BRICK BUILDINGS, and every kind of WOOD WORK. The process by which the base of these paints is produced, makes it impossible that any change should take place in their composition from atmospheric influence. Their identity with iron secures them from galvanic action, so fatal to the durability of lead and other paints on iron work.

They have been exposed on SHIPPING to the action of sea water, and of the sulphuretted hydrogen so prevalent in sea ports and tidal harbours, for more than THREE YEARS without change.

CHIEFNESS and STRENGTH render them peculiarly eligible for IRON BRIDGES, ROOFS, and RAILINGS, FARM BUILDINGS, and SHIPPING.

The attention of the SHIPPING INTEREST is particularly directed to the company's patent compound metallic BLACK PAINT (the only metallic black paint of any value in existence), which will be found to act as a most valuable preservative when applied to iron steam-boats, and wooden vessels. It also forms a beautiful covering for STOVES, and is susceptible of a high polish.

Several imitations of the Patent Alkali Company's paint having been sold under the name of IRON PAINT, the directors of the company deem it necessary to caution the public that no other iron paint is genuine, or partakes in any degree whatever of the properties of the company's paints, the base of the latter being obtained solely by a series of processes, which are protected by the company's patents, and to which alone is owing their extraordinary body, or covering power. Numerous and most satisfactory testimonials have been forwarded to the company's offices, copies of which may be had of the secretary or of the agents.

Price, by the ton, £25, delivered in London or Liverpool, exclusive of packages.

To be obtained exclusively on application to the secretary, Mr. J. A. West, at the offices of the company, 20, Fenchurch-street, London; or of any of the undermentioned parties, who are the only agents of the company:—

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References.—Dr. D. B. Reid, F.R.S.E., &c., House of Commons, Westminster; R. Prosser Esq., C.E., Birmingham; J. L. Bullock, Esq., Editor of *Fraser's Chemical Analysis*, Cornhill-street, Regent-street; J. Gardner, Esq., M.D., Editor of *Liebig's Letters*, &c., Mortimer-street, Portland-place; and W. Shaw, Esq., Strand, London.

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THE DIATONIC FLUTE is quite NEW in its CONSTRUCTION, and retains the old system of fingering.

Amateurs in the provinces have the opportunity of hearing this instrument played by Mr. Richardson, at Jullien's Concerts.—Description forwarded free, on application to the patentee.

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Continue to secure a continually increasing demand; they can be had of any size or length. Their durability and strength, permanent contractility and uniformity of substance, their non-susceptibility of injury from contact with oils, grease, acids, alkalis, or water, and the facility with which the only joint required can be made in bands of from 20 to 300 feet long, render them superior for almost all working purposes, and decidedly economical.

GUTTA PERCHA Soles for Boots and Shoes, Bowls, Buckets, Picture Frames, Brackets, Mouldings, Surgical Instruments, Vases, Cups, Inkstands, Balls, &c., may be had at the Company's Works, Wharf-road, City-road, London, or of any of their wholesale dealers in town or country.

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SANITARY MEASURES.

ALL MEMBERS OF BOARDS OF HEALTH are especially DIRECTED to the most EFFECTIVE MEANS which they can ADOPT to PREVENT the injurious and often FATAL EFFECTS upon the HEALTH of the COMMUNITY, arising from exhalations that are produced from moisture, decayed animal matter (as in grave-yards), stagnant water, and collections of refuse, tending to produce a miasmatic state of atmosphere. In situations so effected, the impervious quality of the ASPHALTE of SEYSEL renders it the most perfect PAVEMENT or COVERING that can be relied upon for hermetically closing, and thereby preventing the rising of moisture and escape of noxious vapours. The present extensive application of this material for covering roofs, terraces, and arches, for preventing the percolation of water, is strong evidence of its effectiveness for the above purposes, which is further confirmed by the following extract from the Report of the Commissioners on the Fine Arts:—

"In 1839, I superintended the construction of a house of three stories on the Lac d'Envelin. The foundation of the building is constantly in water, about 19 inches below the level of the ground floor. The entire horizontal surface of the external and internal walls was covered at the level of the internal ground floor with a layer of SEYSEL ASPHALTE, less than half an inch thick, over which coarse sand was spread.

Since the above date, no trace of damp has shown itself round the walls of the lower story, which are for the most part painted in oil, of a grey stone colour. It is well known that the least moisture produces round spots, darker or lighter, on walls so painted. Yet the pavement of the roof, resting on the soil itself, is only about 24 in. above the external surface of the soil, and only 19 in., at the utmost, above that of the sheet of water.

The layer of Asphalt having been broken and removed, for the purpose of inserting the sills of two doors, spots indicating the presence of damp have been since remarked at the base of the floor-posts."

\* This method has been adopted at the new Houses of Parliament.

Seyssel Asphalt Company, Siangate, London. I. FARRELL, Secretary.

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